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**GREAT LAKES FOREST RESEARCH CENTRE
CENTRE DE RECHERCHE FORESTIÈRE DES GRANDS LACS**

**A review of important
forest insect and disease problems
in the TEMAGAMI DISTRICT
of Ontario, 1950 - 1980**

Compiled by

H. J. Weir, M. J. Thomson,
D. C. Constable and C. G. Jones

Miscellaneous Report No. 27



Canada

THE GREAT LAKES FORESTRY CENTRE

The Great Lakes Forestry Centre is one of six regional establishments located across Canada and operated by the Canadian Forestry Service. The overall objective of the Service is to promote the preservation, enhancement and wise use of a healthy, attractive and bountiful forest resource and terrestrial environment for the economic and social benefit of all Canadians. The Centre pursues this objective by conducting two major programs: research and technical services and forestry development. Both programs address major problems affecting forest management and the forest environment primarily in Ontario, but because of the transprovincial nature of the forest resource, many elements of our research program are of national significance.

Forestry problems are continually assessed by the Canada-Ontario Joint Forestry Research Committee, made up chiefly of senior members of the Centre and the Ontario Ministry of Natural Resources. The Committee ensures that the research resources of both agencies are effectively transmitted to the forest managers in order to improve forest production and protection, and the quality of the environment.

Staff of the forestry development program negotiate and administer federal-provincial cost-sharing agreements with the province of Ontario, conduct economic studies, and implement job creation programs in the forest sector. Again, this requires close cooperation with the Ontario Ministry of Natural Resources and with other provincial and federal agencies concerned with the forest sector.

Close working relations are also maintained by the Centre with educational institutions specializing in forestry and the biological sciences, with the forest industry, and with other forestry organizations in the province.

The Centre recognizes that forested land must be managed in the best public interest, not only for the wood production essential to our economy but also for the recreational purposes that are so important to our social well-being. These goals must be achieved in a manner that will maintain or improve the quality of the forest environment and preserve it for generations to come.

A REVIEW OF IMPORTANT FOREST
INSECT AND DISEASE PROBLEMS
IN THE TEMAGAMI DISTRICT
OF ONTARIO, 1950-1980

Compiled by

H.J. Weir, M.J. Thomson, D.C. Constable and C.G. Jones¹

GREAT LAKES FOREST RESEARCH CENTRE

CANADIAN FORESTRY SERVICE

GOVERNMENT OF CANADA

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FOREWORD

The first forest insect surveys in Ontario were carried out in 1936 from the Dominion Entomological Laboratory in Ottawa and continued from this location until 1944, when the province of Ontario was divided, for the purpose of these surveys, into northern and southern Ontario. In 1945, personnel from Ottawa continued to conduct and report on surveys in the area south of the Algonquin Park and Parry Sound forest districts, while personnel from the Forest Insect Laboratory in Sault Ste. Marie carried out surveys in the area to the north. In 1950 responsibility for reporting insects for all of Ontario fell to the Sault Ste. Marie laboratory. In 1952 the Forest Disease Survey was initiated with headquarters in Maple, Ontario, then was moved to Sault Ste. Marie in 1967. The results of these surveys of insects and diseases are reported in the Annual Report of the Forest Insect and Disease Survey (FIDS) published by Canadian Forestry Service headquarters in Ottawa. In addition, annual district and regional reports, begun in 1948, are prepared by FIDS technicians (Rangers) in Sault Ste. Marie. In 1980 a new provincial report was released in Ontario. The contents of the following review have been abstracted from these reports and compiled in alphabetical order by the scientific names of species in each of the following categories:

Major Insects or Diseases

Capable of causing serious injury to or death of living trees or shrubs.

Minor Insects or Diseases

Capable of causing sporadic or localized injury but not usually a serious threat to living trees or shrubs.

Abiotic Damage

Damage caused by non-living factors.

All measurements in this review are in metric form and conversions from Imperial measurements given in the earliest reports are taken to the second decimal point [i.e., sq. mi. to km^2 = area (sq. mi.) $\times$ 2.59 = area km^2]. Infestation maps in this review were copied from the original maps in the FIDS technicians' reports. Abbreviations for the common names of the host tree species, along with the scientific names, are shown in Appendices A and B. To facilitate the location of hosts, deciduous and coniferous species have been separated and listed alphabetically under the common names.

Appendix C is a series of maps for northeastern Ontario grouped alphabetically by insect species or disease pathogen and showing the location of infestations within a region or infestation boundaries that extend beyond regions.

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We also wish to acknowledge the following authors of the FIDS district and regional reports from which this review was abstracted.

1950-1957 A.A. Harnden

1958-1980 L.S. MacLeod

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INTRODUCTION

This report is a review of significant forest insects and diseases that have occurred in the Temagami District between 1950 and 1980, with a brief summary of outbreaks prior to 1950. The present Temagami District was formed in 1973 from the northern portion of the North Bay District along with several townships from the southern portion of the former Swastika District. In the selection of pests for this report particular attention was paid to the major working groups of host species in the district, namely, tolerant hardwoods (poplar, sugar maple, yellow birch and white birch) and conifers (white pine, jack pine, red pine, balsam fir, black spruce, white spruce and tamarack). Also included are pests that cause damage to shade and ornamental trees. The insects and diseases described are capable of causing, or have caused, tree mortality or a reduction in growth. Also included are abiotic conditions that have caused tree damage, i.e., frost, wind, snow and hail.

SUMMARY

FOREST INSECTS

Birch Sawfly, *Arge pectoralis* (Leach)
pages 9-12

[Major]

Although this insect does not cause mortality, weakened trees are subject to attack by diseases and borers. Severe defoliation occurred from 1950 to 1955, and low populations were reported from 1956 to 1980.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.
pages 13-19

[Major]

Defoliation by this insect seldom causes mortality of the host but weakened trees are subject to attack by secondary insects and diseases. Severe outbreaks were recorded from 1961 to 1963 and from 1972 to 1973.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)
pages 20-25

[Major]

No tree mortality has been recorded as caused by this defoliator, which affects primarily aspen and poplar. Severe defoliation was reported from 1969 to 1974 and again in 1976. Prior to 1950 no infestations were reported.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)
pages 26-44

[Major]

This insect is considered to be the most destructive insect pest of several coniferous hosts in eastern Canada. The main hosts are white spruce and balsam fir. Though not major hosts, black spruce, eastern hemlock and tamarack are attacked and considerable tree mortality can occur. Severe defoliation was reported between 1970 and 1980. Mortality of balsam fir was first reported in 1975 in Speight and van Nostrand townships. Infestations were reported as early as 1940 in the district.

Larch Casebearer, *Coleophora laricella* (Hbn.)
page 45

[Major]

This insect defoliates all native and introduced species of larch. Growth reduction can follow a single defoliation, and mortality can occur after two or more years of severe defoliation. Infestations were reported as early as 1946 in the district.

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.)
pages 46-53

[Major]

The greenstriped mapleworm defoliates hardwood stands, particularly red maple and sugar maple. Tree mortality can occur after several years of severe defoliation. In 1952 and 1953, moderate-to-severe defoliation was reported in the district. Between 1953 and 1980 varying degrees of defoliation were reported.

Birch Leafminer, *Fenusa pusilla* (Lep.)
page 54

[Major]

Browning of foliage is usually restricted to individual shade and ornamental trees, but when infestations build up, stands of birch are infested and prolonged defoliation can weaken trees that are predisposed to disease and borer attacks. Severe browning of trees was recorded periodically between 1960 and 1980.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.
pages 54-70

[Major]

Trembling aspen, the preferred host, is seldom killed in outbreaks, but sugar maple and red oak are severely weakened and may suffer mortality if an infestation persists, or as a result of secondary factors. Severe outbreaks were reported from 1950 to 1953, and from 1972 to 1975. Infestations were reported as early as 1939.

Balsam Fir Sawfly, *Neodiprion abietis* complex
page 71

[Major]

Mortality of balsam fir and white spruce trees can occur when severe defoliation persists over a period of years. Between 1950 and 1980, populations were low in the district.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)
pages 72-73

[Major]

This destructive pest of pine plantations can cause tree mortality following several years of severe defoliation. High populations were reported from 1954 to 1958, and from 1959 to 1980 low populations persisted.

Swaine Jack Pine Sawfly, *Neodiprion swaini* Midd.
pages 73-84

[Major]

The Swaine jack pine sawfly is the most destructive sawfly on jack pine in eastern Canada. It has killed thousands of hectares of merchantable trees between the 46th and 49th parallels, mostly in Quebec but also in northeastern Ontario. Light-to-severe infestations were first reported in 1946 west of Lady Evelyn Lake. Severe defoliation continued between 1952 and 1962, and again from 1966 to 1980. Tree mortality was also recorded as early as 1946 at Lady Evelyn Lake in Leo Township.

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., and *N. virginianus* complex
pages 85-90

[Major]

These sawflies are capable of causing mortality of semimature and plantation pine trees when populations are high. From 1950 to 1980 populations fluctuated considerably but no mortality was recorded.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)
pages 90-91

[Major]

Although this insect has not been known to cause tree mortality, severe browning of foliage over a period of years can cause a reduction in growth. Populations fluctuated greatly from 1952 to 1980 at numerous locations in the district.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)
pages 91-93

[Major]

This insect feeds only on spruce. Ornamentals, windbreaks and nursery stock can be severely damaged and suffer mortality after repeated defoliation. Trees that do not die exhibit some branch killing and considerable growth reduction. Varying degrees of foliar damage have occurred since 1950.

White Pine Weevil, *Pissodes strobi* Peck.
pages 93-95

[Major]

The white pine weevil is a serious pest of pines and spruces. Weeviling causes leading shoot mortality. Dead leaders are replaced by one or more lateral shoots, and multiple-stemmed trees result. Serious damage has been recorded especially in plantations and on immature trees during the past 30 years.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)
pages 95-104

[Major]

Severe defoliation by this sawfly for 4 or 5 years will cause a loss of increment, and tree mortality can occur after 6 to 9 years.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)
pages 105-106

[Major]

Although mountain-ash is not considered a merchantable species, a great number are utilized as shade and ornamental trees in rural and urban areas. This insect can weaken trees when prolonged severe defoliation occurs and subsequent infestations can cause mortality. Populations of varying degrees of intensity have been reported during most years since 1956.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)
pages 106-107

[Major]

Defoliation by this miner can weaken trees and leave them susceptible to secondary insects and diseases, and may be a contributing factor in birch decline. As a rule these insects attack single trees, but when populations build up, stands of trees are severely defoliated. Populations have fluctuated since the insect was first recorded in 1956.

Aspen Leafroller, *Pseudeuxentera oregonana* Wlshm.
pages 107-108

[Major]

Although this insect can cause severe defoliation of the host, no mortality has been recorded. Varying degrees of defoliation

occurred between 1964 and 1980. No infestations were reported prior to 1950.

Other Noteworthy Insects
pages 108-118

[Major or Minor]

Insects that have the capability of or the potential for causing damage to stands, regeneration and plantations.

FOREST DISEASES

Armilaria Root Rot, *Armillaria mellea* (Vahl: Fr.) Kummer
page 121

[Major]

This root rot is capable of killing both weakened and healthy trees and is a particularly serious pest in pine plantations that have been planted around old stumps. Mortality was recorded in 1963, and between 1976 and 1980. There were no reports of this root rot prior to 1962.

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau
page 121

[Major]

This extremely damaging pathogen of white elm trees was first reported in 1971 and since then has caused heavy tree mortality throughout the district.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary
C. ledicola (Peck) Lagerh.

pages 121-123

[Major]

These are the most widely spread rusts in the Canadian boreal forest. They are a major concern on mature trees but the potential for damage in nurseries can also be high. From 1954 to 1980, damage was reported as light.

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver
pages 123-124

[Major]

"Ink spot" is a leaf disease of poplars caused by the fungus *Ciborinia*. Many poplar species and hybrids are susceptible, but trembling aspen is most commonly affected. Heavily infested trees may be defoliated prematurely and repeated attacks can reduce increment and even kill regeneration. Fluctuating levels of defoliation have been reported for most years since 1958.

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides* Arthur
 Sweet Fern Blister Rust, *C. comptoniae* Arthur
 White Pine Blister Rust, *C. ribicola* J.C. Fischer, ex Rabenh.
 Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats. [Major]
 pages 124-129

These rusts may kill trees outright or make them more susceptible to insects, decay and wind breakage, depending on the degree of infection. Since 1954, these disease organisms have fluctuated greatly and damage has been minimal.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller [Major]
 page 129

Mortality caused by this disease is usually restricted to trees in the 7-cm to 13-cm class, growing on poor sites, but branch and top mortality can occur in trees of larger diameter. Varying degrees of damage have been reported since 1953.

Shoot Blight, *Venturia macularis* (Fr.) E. Müller and v. Arx [Major]
 page 130

Reduced stocking of regeneration aspen occurs when the incidence of this disease is high. Trees more than 5 years old are seldom affected, and therefore the disease is of little economic importance in natural stands. Varying levels of shoot mortality have occurred since 1962.

Other Noteworthy Diseases
 pages 131-135

These are diseases with a potential for causing damage to natural stands, regeneration and plantations.

ABIOTIC DAMAGE

pages 139-141

This condition is caused by a variety of influences, e.g., frost, winter drying, salt, etc. Weakened trees are susceptible to a number of diseases. Severe abiotic damage has been reported periodically since 1957.

INSECTS

Birch Sawfly, *Arge pectoralis* (Leach)

[Major]

Host(s): birch

<u>Year</u>	<u>Remarks</u>
1950	This sawfly was widely distributed throughout the district (see map, page 10). Sampling at 19 points revealed that defoliation was light at 9 and moderate-to-severe at 10.
1951	A marked decrease in birch sawfly populations was evident. Medium-to-heavy infestations were confined to a few small isolated areas.
1952	Small pockets of heavy infestation were observed on shoreline white birch on Temagami and Bay lakes. Small numbers of trees were lightly damaged in Banks, Lundy, Dymond and Harris twps.
1953	Small pockets of heavy infestation persisted on lakeshore birch at numerous points and light defoliation was evident at scattered locations in Wallis, Banks and Speight twps.
1954	Small pockets of medium-to-heavy infestation recurred on white birch trees along shorelines of lakes at several points. Light defoliation was observed at numerous points elsewhere (see map, page 11).
1955	Although populations declined generally, pockets of medium-to-heavy and light infestations were observed at several locations (see map, page 12).
1956	Populations declined to a low level. Pupal and egg parasitism were evident.
1957-1969	not reported
1970	low numbers of colonies observed at scattered locations
1971-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Sawfly

Areas within which defoliation
occurred in 1950

LEGEND

Light defoliation ⊙

Moderate-to-severe defoliation ●

Scale

Kilometres 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Sawfly

Areas within which defoliation
occurred in 1954

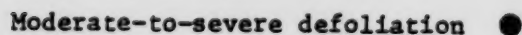
LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 0 10 20



Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): birch

[Major]

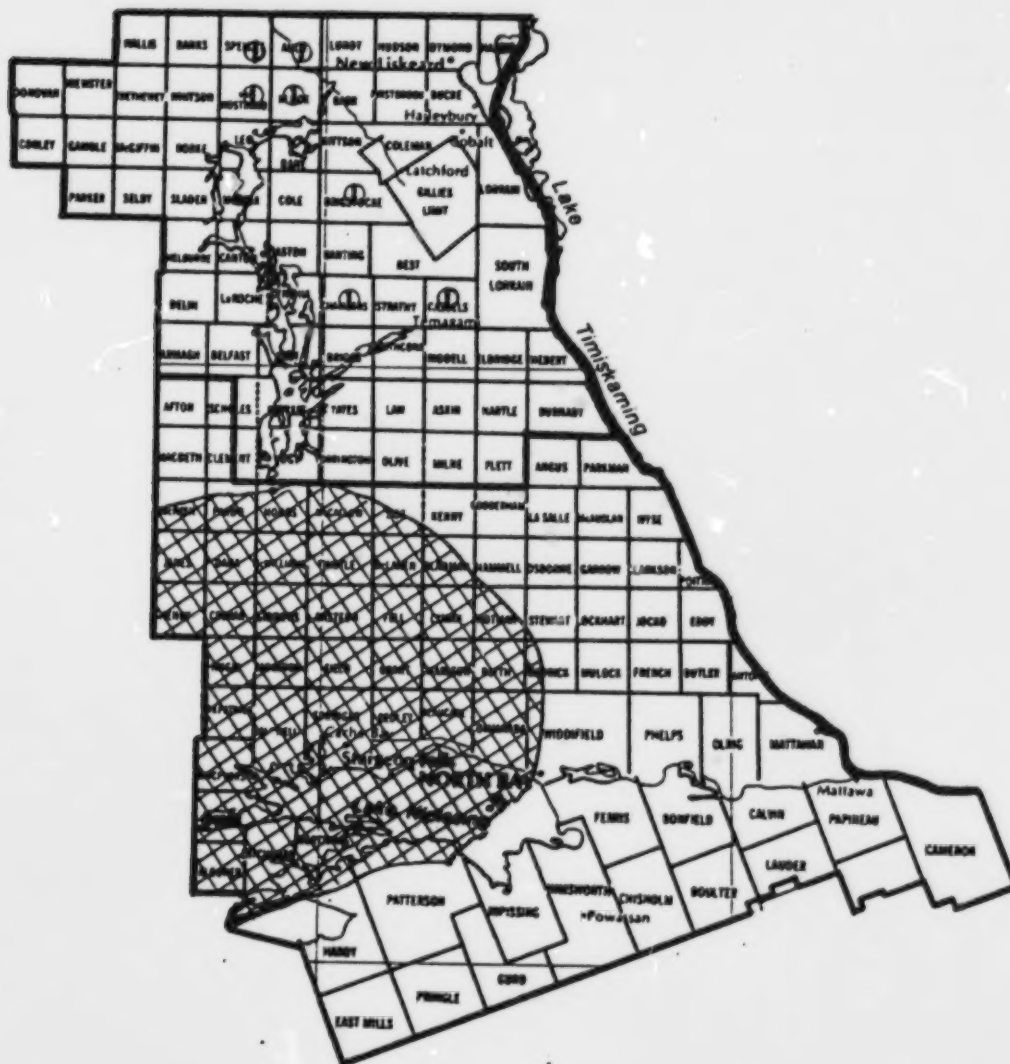
<u>Year</u>	<u>Remarks</u>
1950	Pockets of light defoliation were observed at numerous scattered locations in the district (see map, page 15).
1951-1960	not reported
1961	Heavy infestations caused moderate-to-severe defoliation of host trees in the southeastern part of the district as far north as the town of Temagami (see map, page 16). Small pockets of light infestation were observed at numerous points elsewhere in the district.
1962	Infestations persisted and expanded throughout the district. Moderate-to-severe defoliation occurred in most stands.
1963	High populations persisted and caused moderate-to-severe defoliation of host species throughout the entire district (see map, page 17).
1964	Populations declined markedly. White birch trees in the eastern part of the district were lightly defoliated whereas no damage was evident in the western part.
1965	Pockets of light infestation persisted in the eastern part of the district.
1966	Lightly infested trees were observed in Bucke, Coleman, Lorrain and South Lorrain twps.
1967	Only very small numbers could be found.
1968-1971	not reported
1972	High populations caused moderate-to-severe defoliation in the southern third of the district. Light damage was evident throughout the remainder of the district (see map, page 18).

(cont'd)

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. (concl.)

<u>Year</u>	<u>Remarks</u>
1973	The area of medium-to-heavy infestation reported in 1972 decreased markedly, leaving moderate-to-severe damage caused by the insect confined to the extreme southern part of the district. Light defoliation was commonly observed throughout the remainder of the district (see map, page 19).
1974-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Areas within which defoliation
occurred in 1950

LEGEND

Light defoliation ①

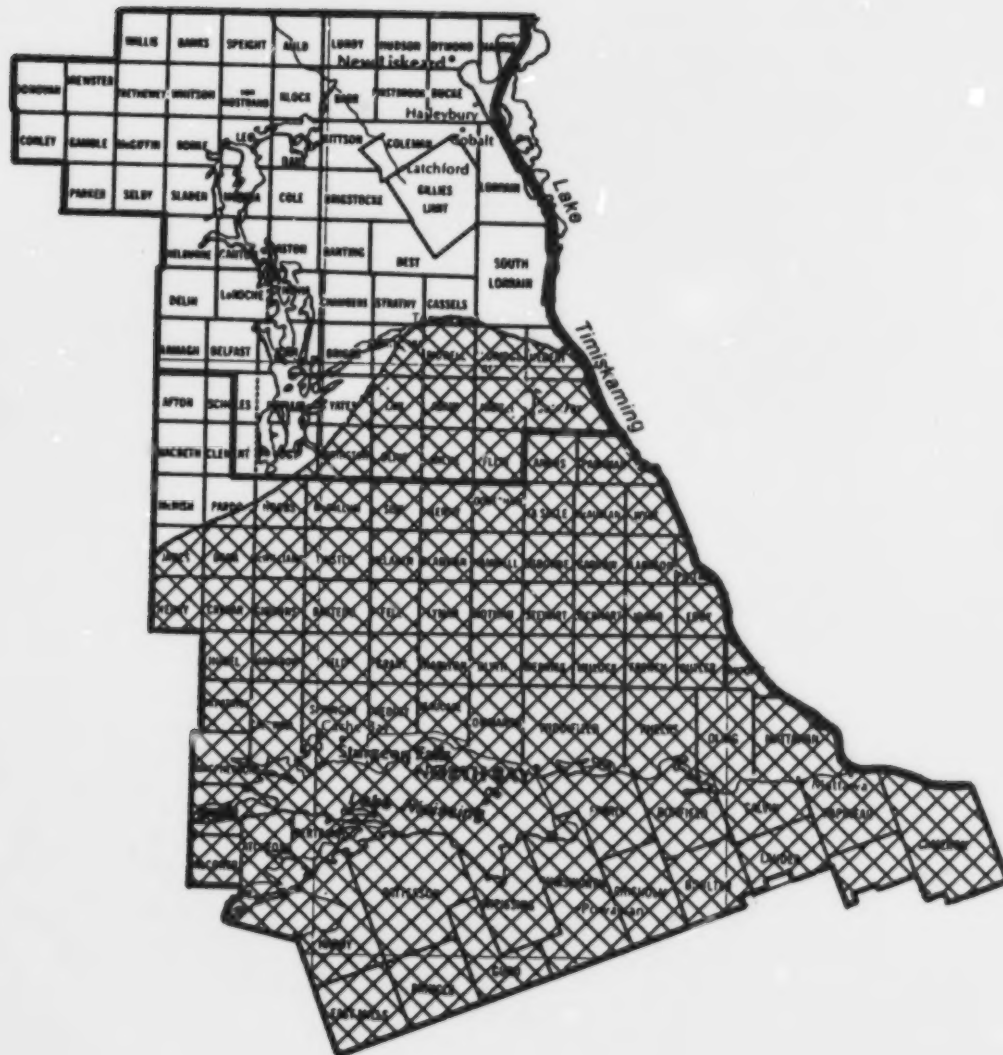
Moderate-to-severe defoliation



Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Areas within which defoliation
occurred in 1961

LEGEND

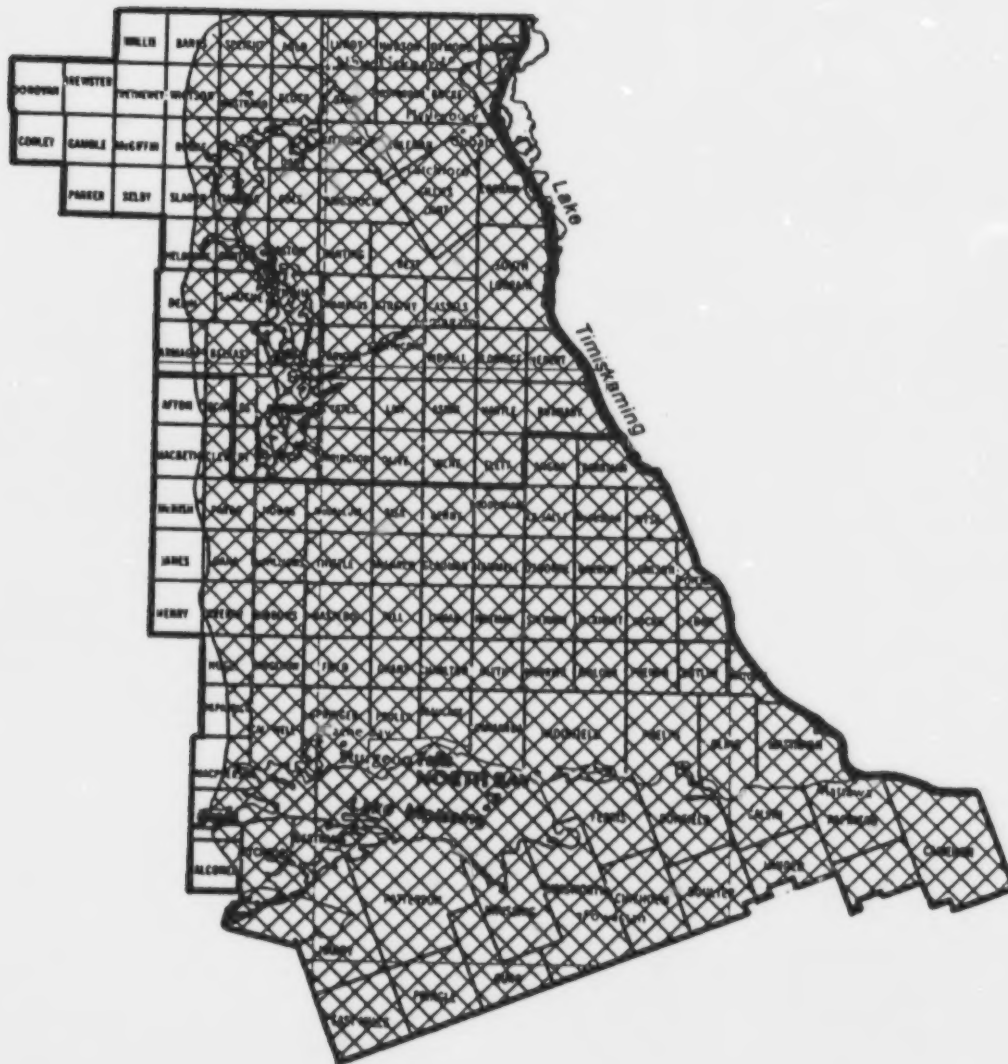
Moderate-to-severe defoliation



Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 10 20

Birch Skeletonizer

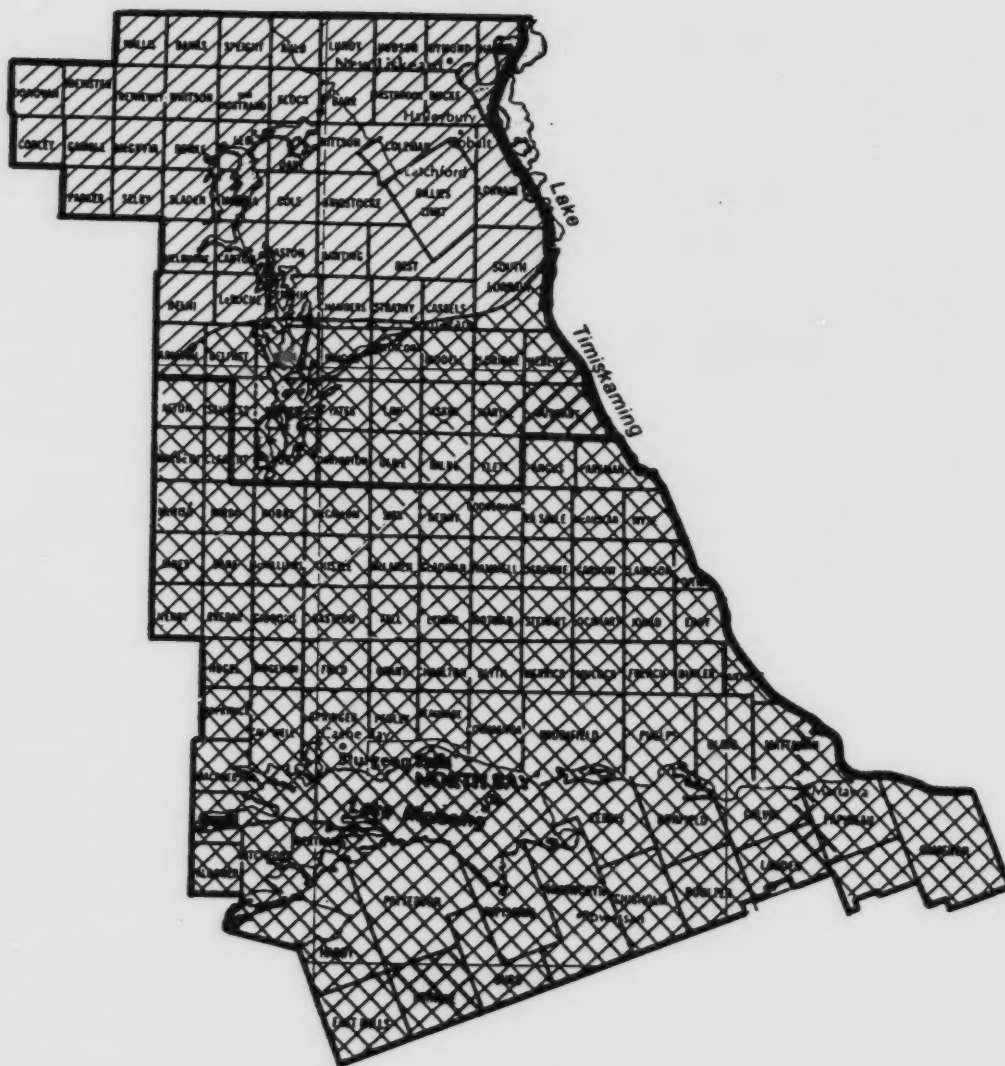
Areas within which defoliation
occurred in 1963

LEGEND

Moderate-to-severe defoliation



TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Areas within which defoliation
occurred in 1972

LEGEND

Light defoliation



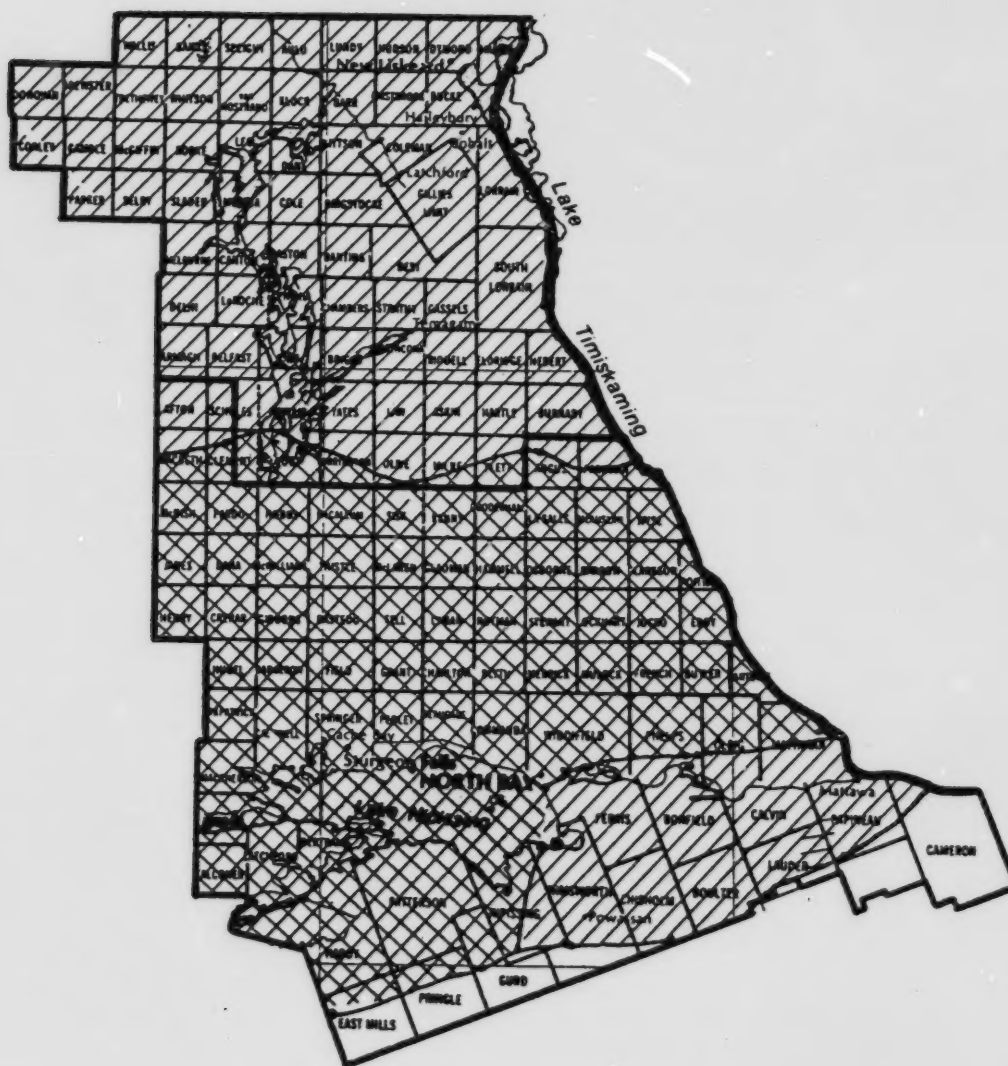
Moderate-to-severe defoliation



Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Scale

Areas within which defoliation
occurred in 1973

Kilometres 20 10 0 10 20

LEGEND

Light defoliation 

Moderate-to-severe defoliation 

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)

Host(s): poplar

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1956	not reported
1957-1961	Low numbers were observed at a few points in the district.
1962	not reported
1963	Low numbers found usually in association with other insect species
1964-1968	not reported
1969	Pockets of moderate-to-severe defoliation of aspen were observed in Gillies Limit, Lorrain and South Lorrain twps. Light infestations were observed at scattered points elsewhere.
1970	A substantial increase in populations caused severe defoliation of several aspen stands in Gillies Limit Twp and in the Cobalt area.
1971	High populations of this insect caused moderate-to-severe defoliation in aspen stands in the northeastern part of the district (see map, page 22).
1972	A heavy infestation persisted in the northeastern part of the district and new heavy infestations were found in the southeastern and southwestern parts. Over all, aspen stands through approximately 6,640 ha of forested land were damaged (see map, page 23).
1973	Although high populations persisted and caused moderate-to-severe defoliation in numerous stands, an appreciable decrease in the size of infestations over 1972 was evident (see map, page 24).
1974	Although heavy infestations persisted (see map, page 25) they declined in intensity, and defoliation was therefore less severe than in 1973.

(cont'd)

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.) (concl.)

<u>Year</u>	<u>Remarks</u>
1975	Populations declined to light intensity
1976	Populations increased and caused moderate-to-severe defoliation in aspen stands in Gillies Limit, Strathy, Askin and Hartle twps; smaller pockets occurred at several locations elsewhere.
1977	Populations declined to a low level.
1978-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Large Aspen Tortrix

Areas within which defoliation
occurred in 1971

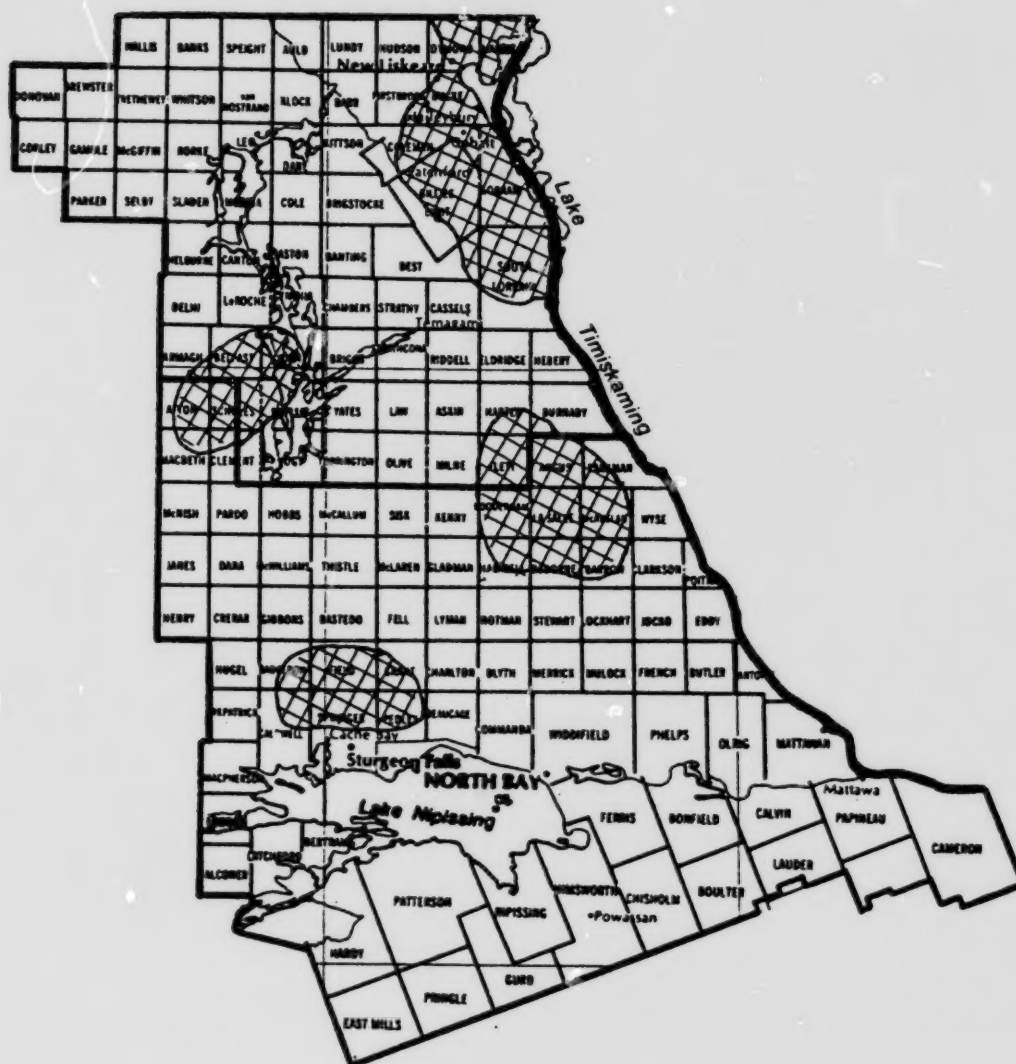
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Large Aspen Tortrix

Areas within which defoliation
occurred in 1972

LEGEND

Moderate-to-severe defoliation 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Large Aspen Tortrix

Areas within which defoliation
occurred in 1973

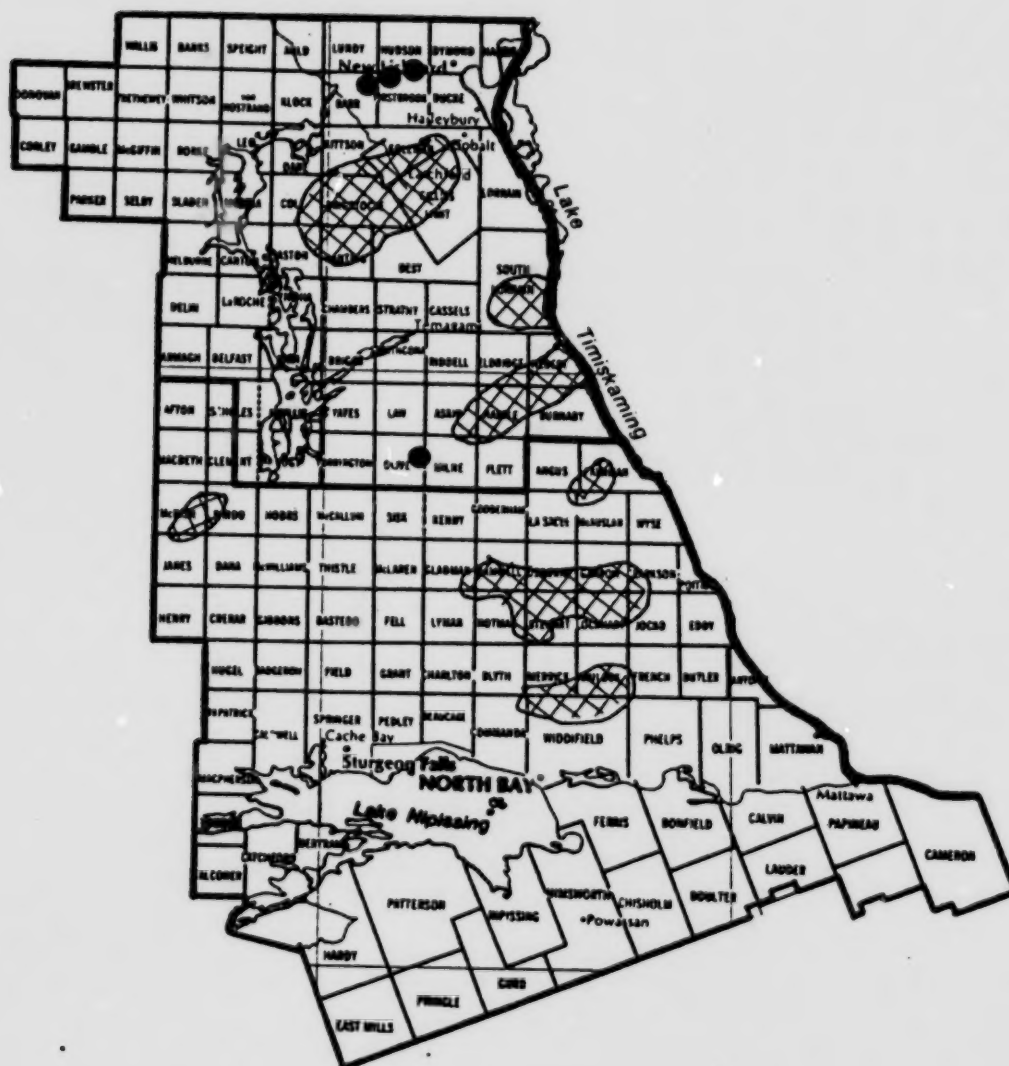
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Large Aspen Tortrix

Areas within which defoliation
occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 0 10 20

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): wS, bF, eH, tL

[Major]

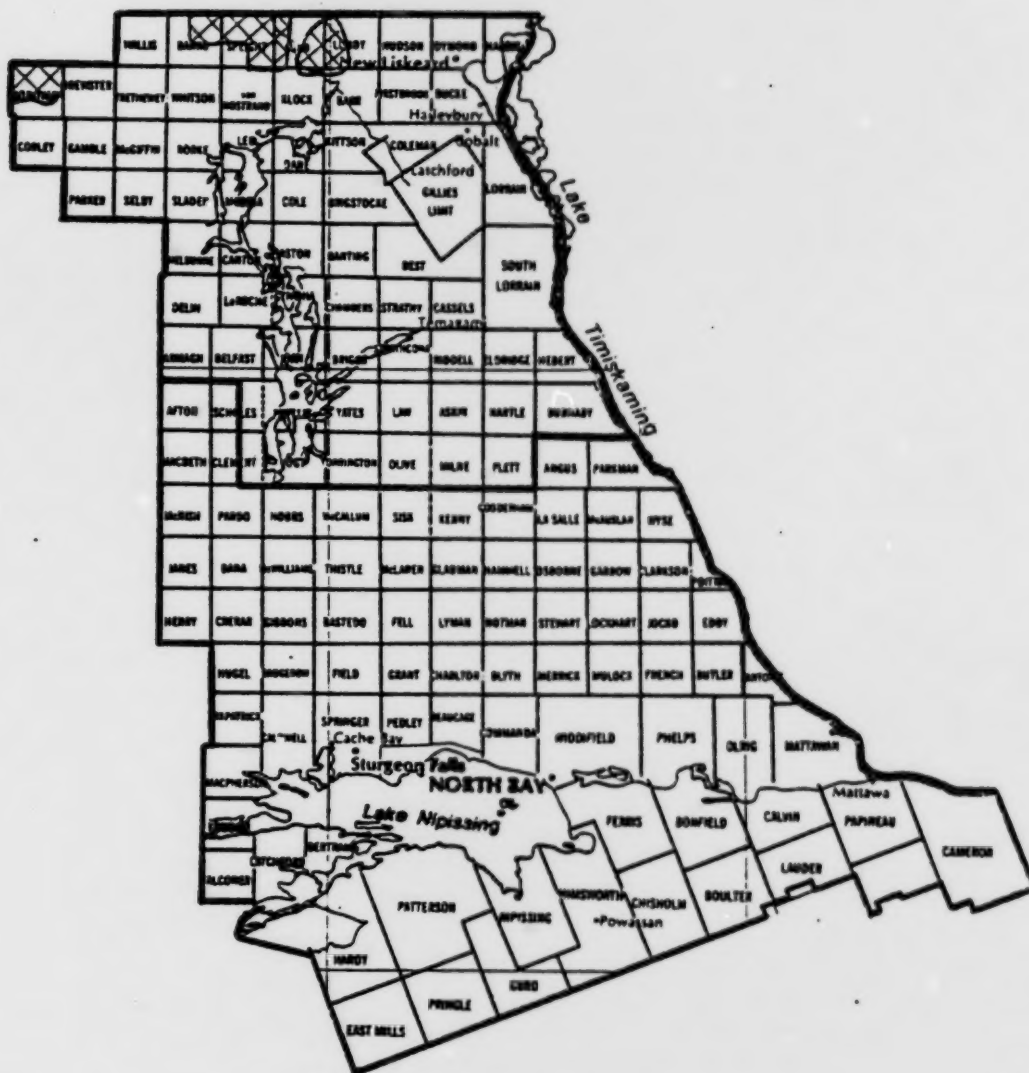
<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960-1961	Low numbers of larvae were collected at scattered points in the southern part of the district.
1962-1963	Low numbers of larvae were collected at widely separated points in the district.
1964-1969	not reported
1970	Populations increased markedly and caused moderate-to-severe defoliation through approximately 1,300 ha of forested land in Banks, Speight, Auld, Donovan and Lundy twps in the northern part of the district (see map, page 28).
1971	The overall area of infestation in the northern part of the district increased by more than 100% to approximately 2,700 ha of forested land in Banks, Speight, Auld, Donovan, Brewster, Corley and Gamble twps (see map, page 29).
1972	The area of infestation increased for the second consecutive year and budworm caused moderate-to-severe defoliation through approximately 4,200 ha of forested land in the northern and northwestern part of the district (see map, page 30).
1973	The area of infestation increased to approximately 21,000 ha, and damage was evident through approximately half of the district (see map, page 31).
1974	The area of infestation continued to increase. Moderate-to-severe defoliation occurred through about 80% of the district; a small area in the northeastern part was left free of damage (see map, page 32).
1975	The area within which moderate-to-severe defoliation occurred remained virtually the same as in the previous year (see map, page 33). Spruce budworm-caused mortality was recorded in Speight, Banks and van Nostrand twps (see map, page 34).

(cont'd)

Spruce Budworm, *Choristoneura fumiferana* (Clem.) (concl.)

<u>Year</u>	<u>Remarks</u>
1976	Host stands throughout the entire district suffered moderate-to-severe defoliation caused by the spruce budworm (see map, page 35). The area within which budworm-caused mortality was recorded increased ninefold over the previous year (see map, page 36).
1977	Moderate-to-severe damage recurred throughout the entire district (see map, page 37). Aerial mapping revealed that budworm-associated tree mortality increased, and extended through approximately 50% of the district (see map, page 38). Ground checks at 14 locations revealed an average incidence of 32% budworm-caused balsam fir mortality in the areas examined.
1978	A slight decrease in the area affected by medium-to-heavy budworm infestation was noted in the New Liskeard-Haileybury area (see map, page 39). The area within which budworm-caused mortality occurred expanded and stands through more than 50% of the district were affected (see map, page 40). The incidence of tree mortality also increased markedly and averaged 43% at 17 locations evaluated.
1979	Little change from the previous year was evident in the area within which moderate-to-severe budworm defoliation occurred (see map, page 41). The area of budworm-caused mortality continued to expand, and forested land through more than 75% of the district was affected (see map, page 42). The incidence of tree mortality continued to increase and averaged 54% at 16 locations evaluated.
1980	The area within which moderate-to-severe budworm defoliation occurred remained much the same as in the previous year (see map, page 43). Although there was little change from the previous year in the area within which budworm-caused tree mortality occurred (see map, page 44), the incidence of tree mortality increased for the fourth consecutive year and averaged 57% at nine locations evaluated.

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1970

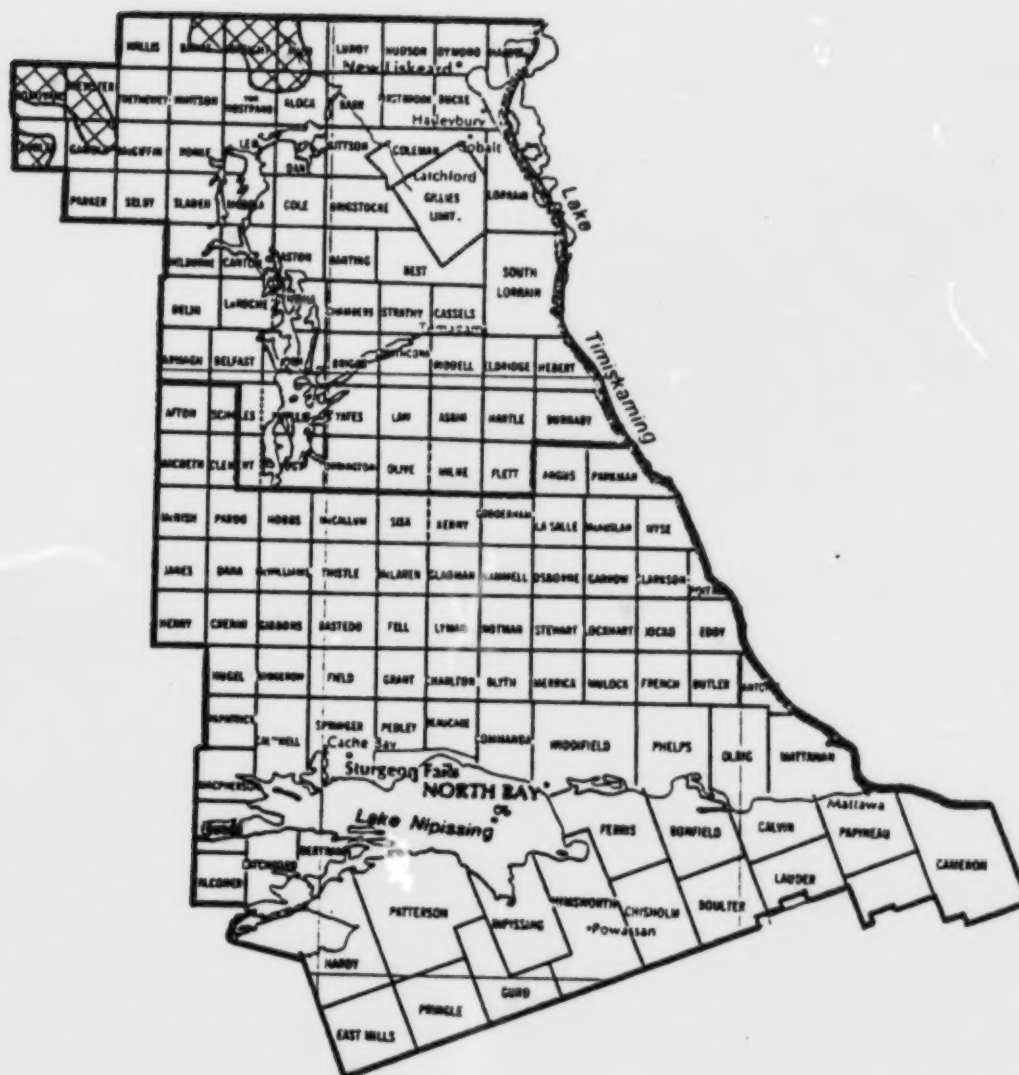
LEGEND

Moderate-to-severe defoliation 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Scale

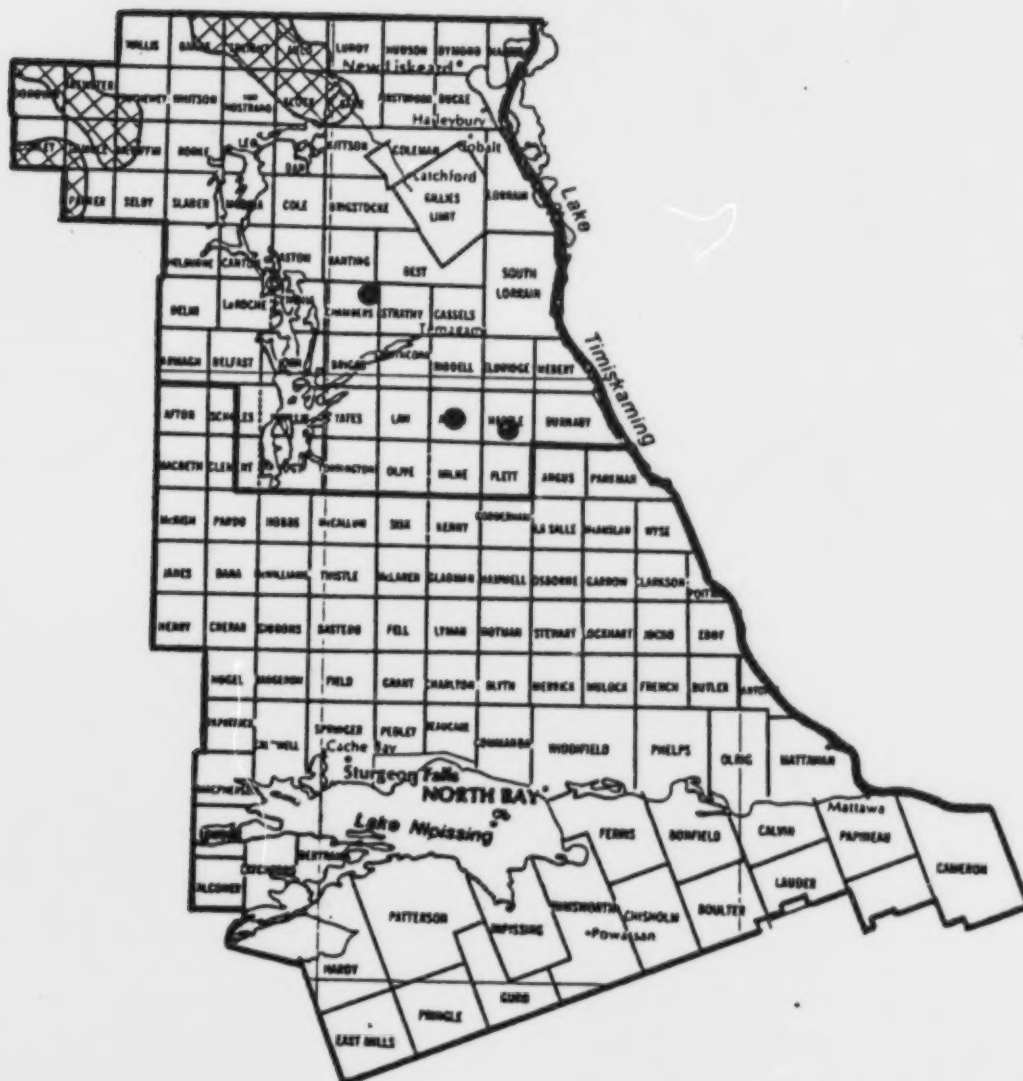
Areas within which defoliation
occurred in 1971

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation 

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1972

LEGEND

Moderate-to-severe ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1973

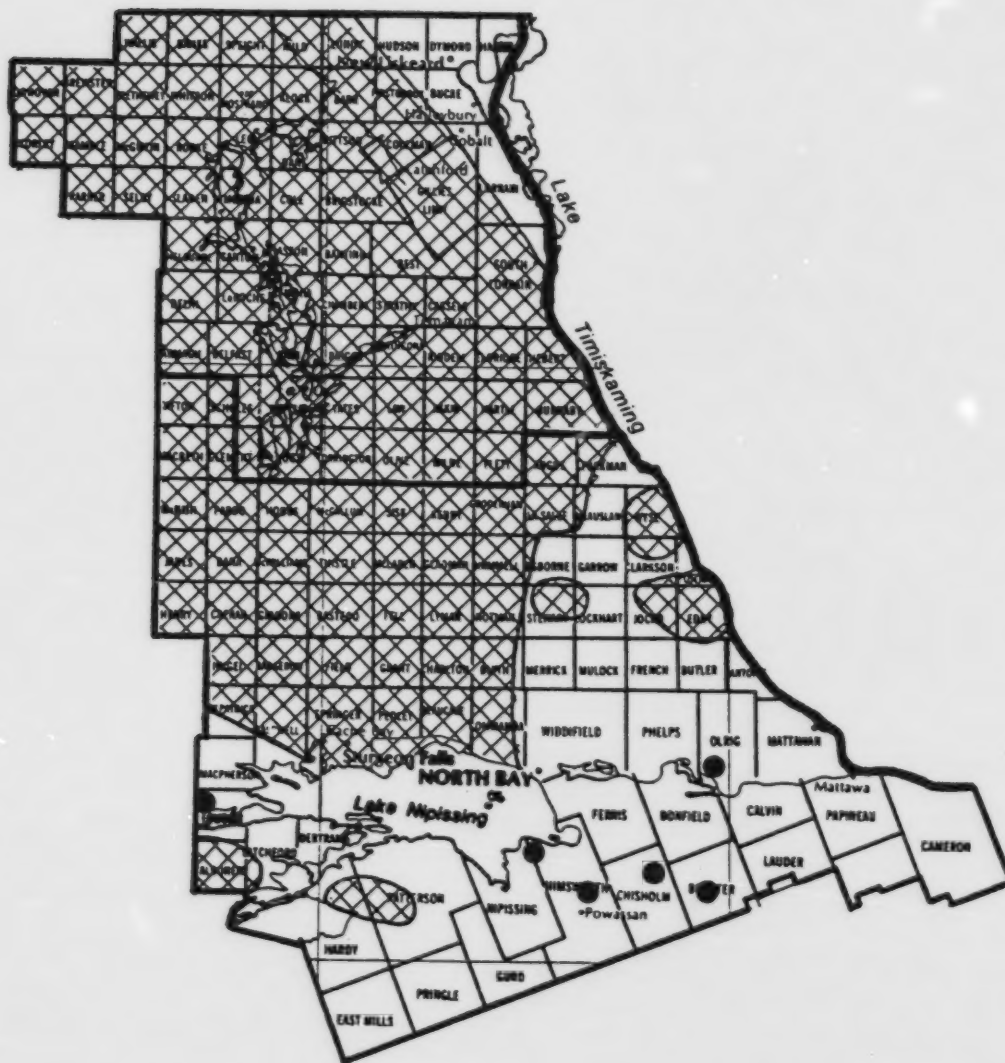
LEGEND

Moderate-to-severe ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1974

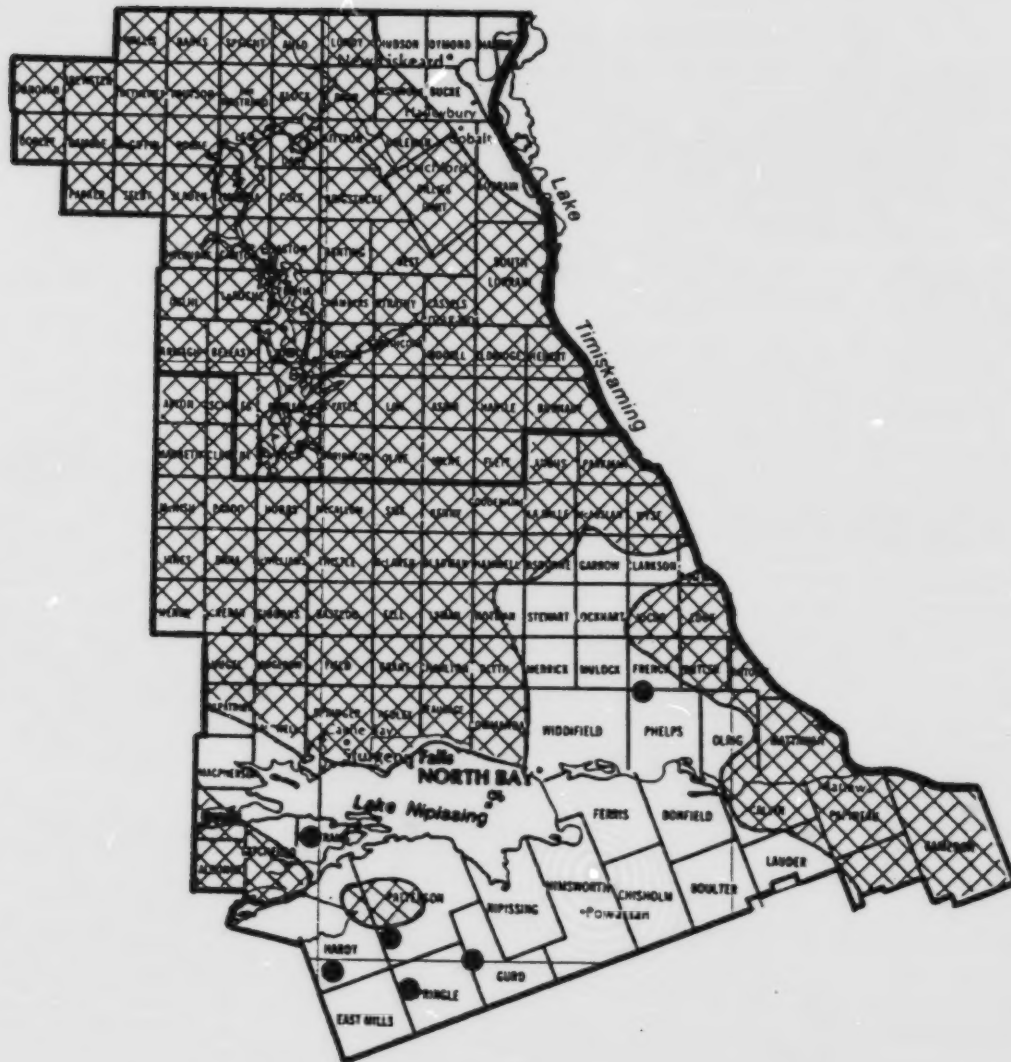
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which whole tree and
top mortality occurred in 1975

LEGEND

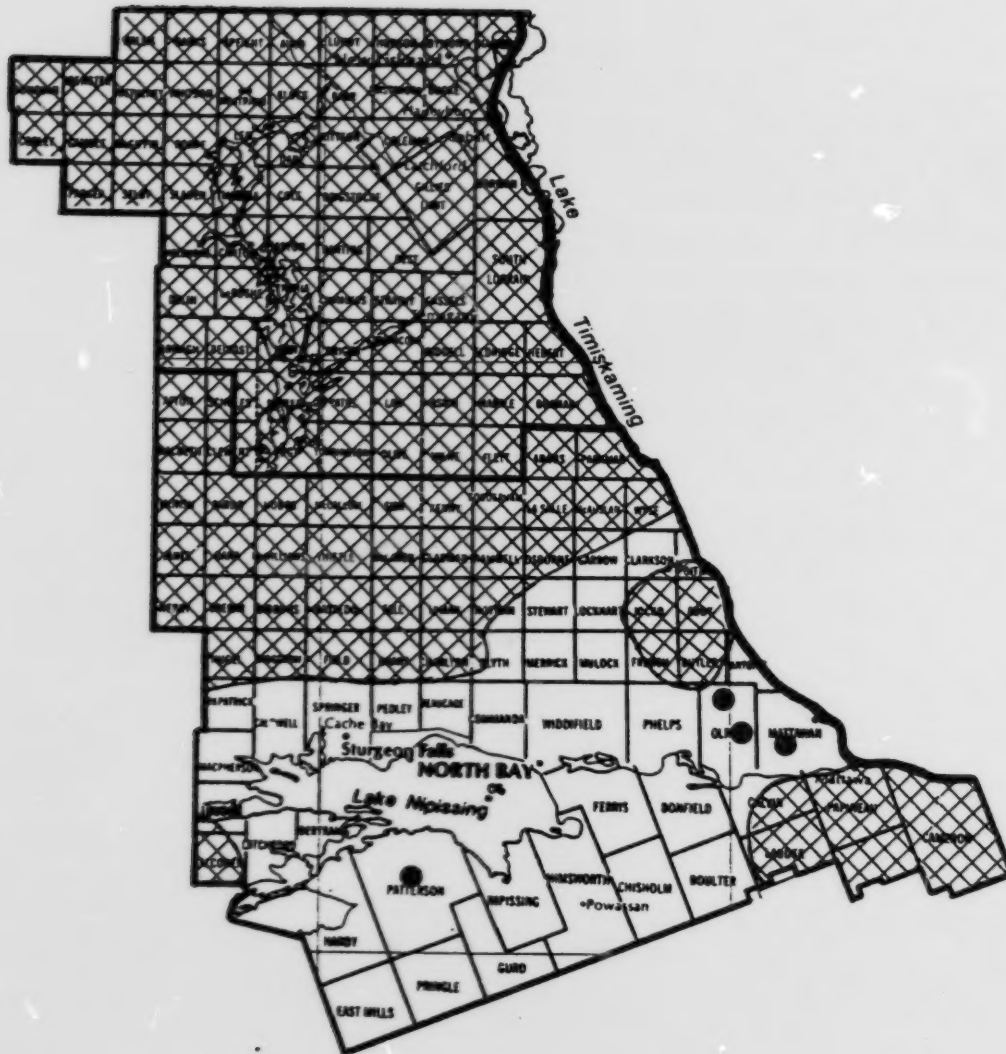
Mortality



Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1976

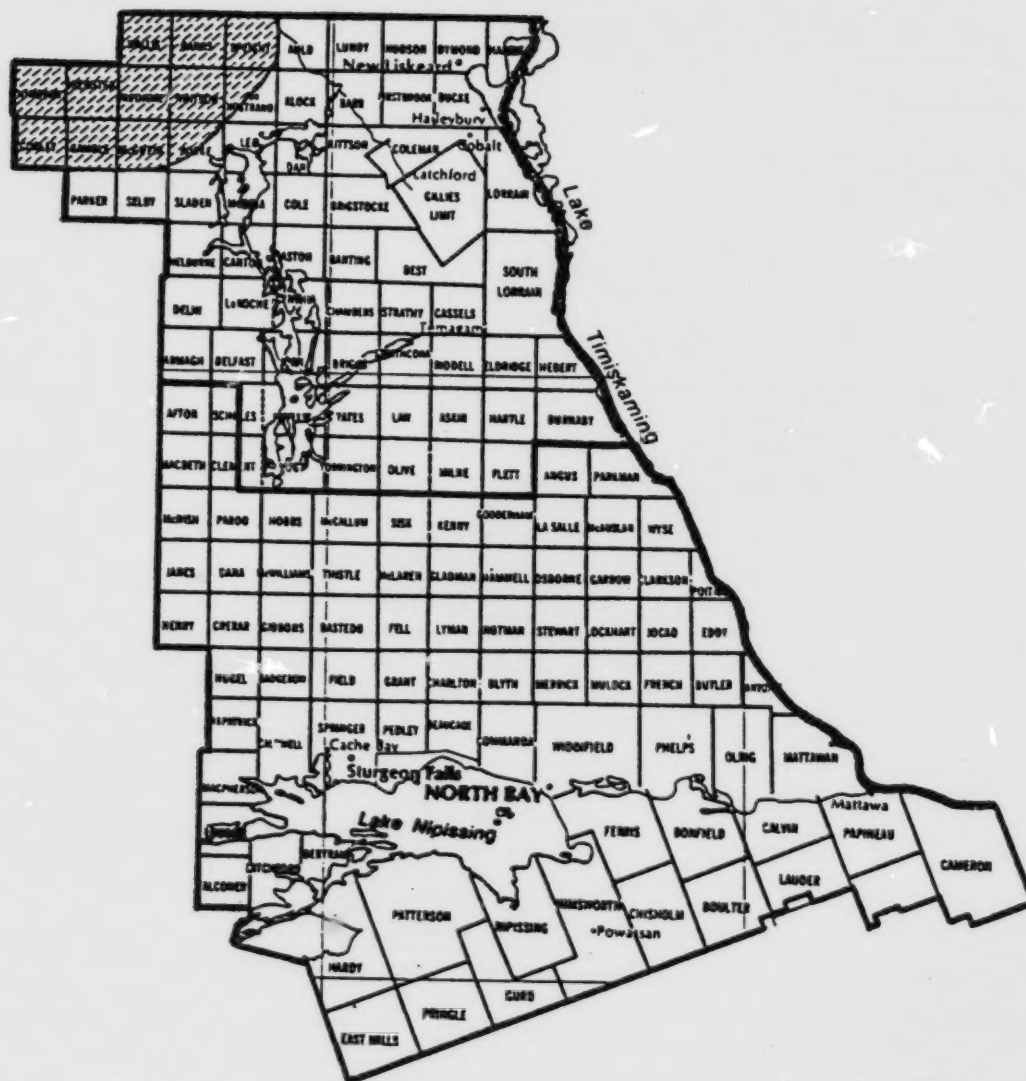
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

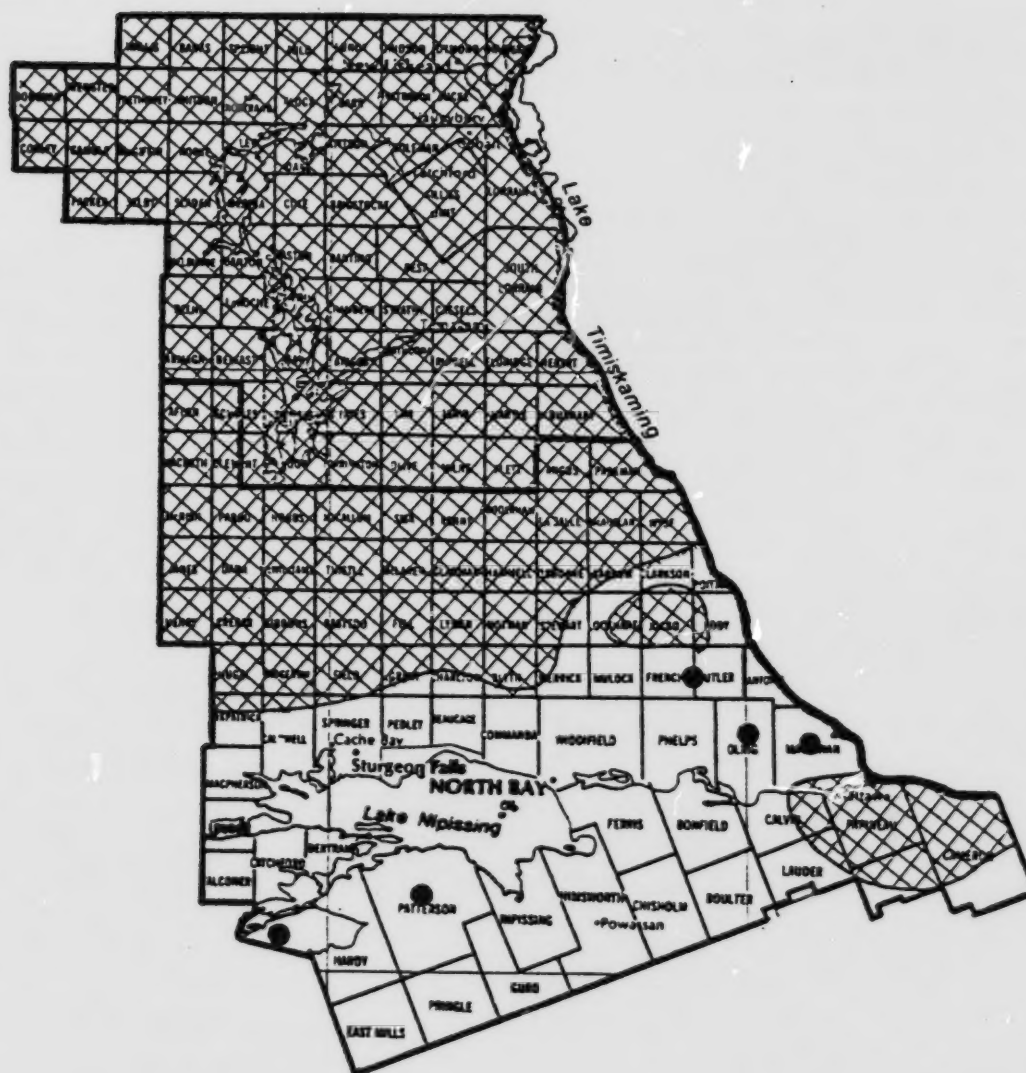
Areas within which whole tree and
top mortality occurred in 1976

LEGEND
Mortality 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1977

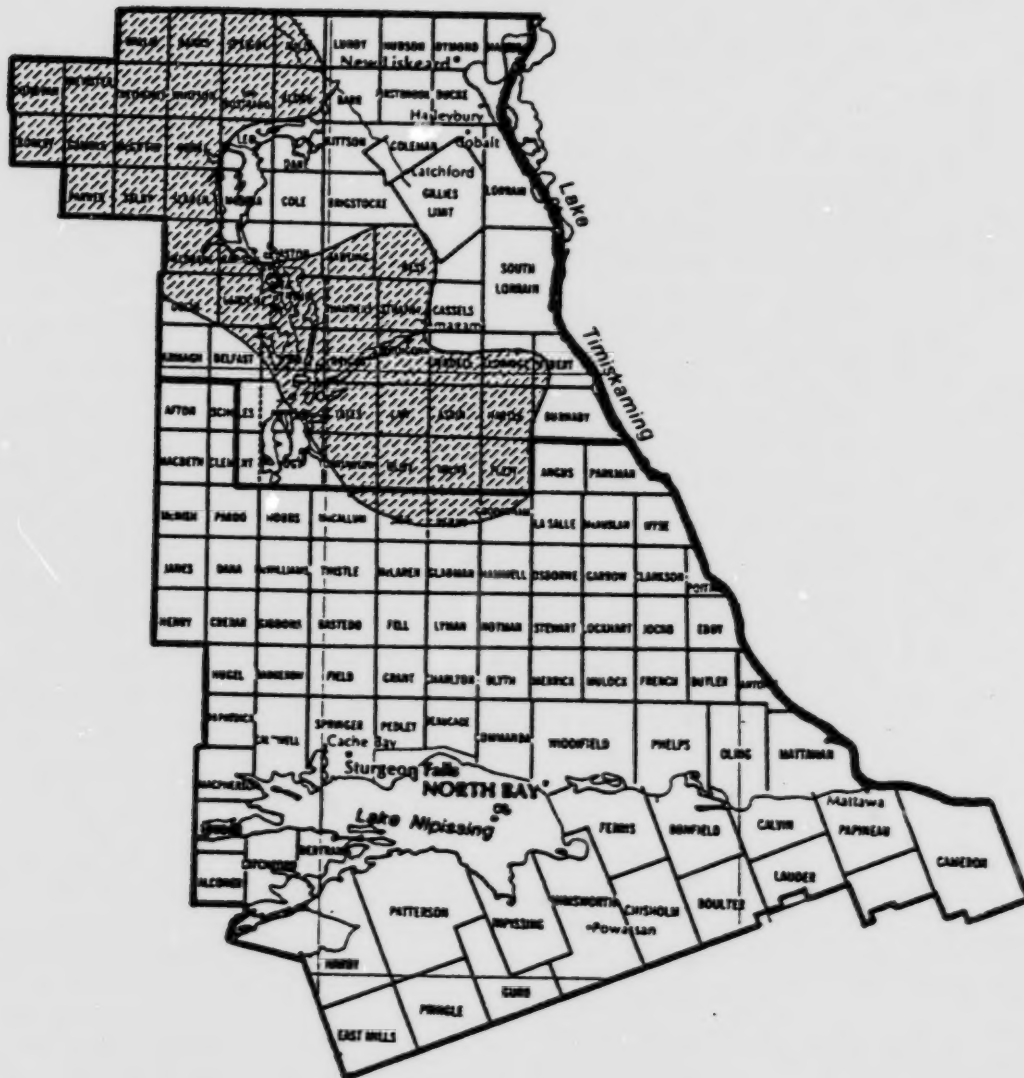
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Spruce Budworm

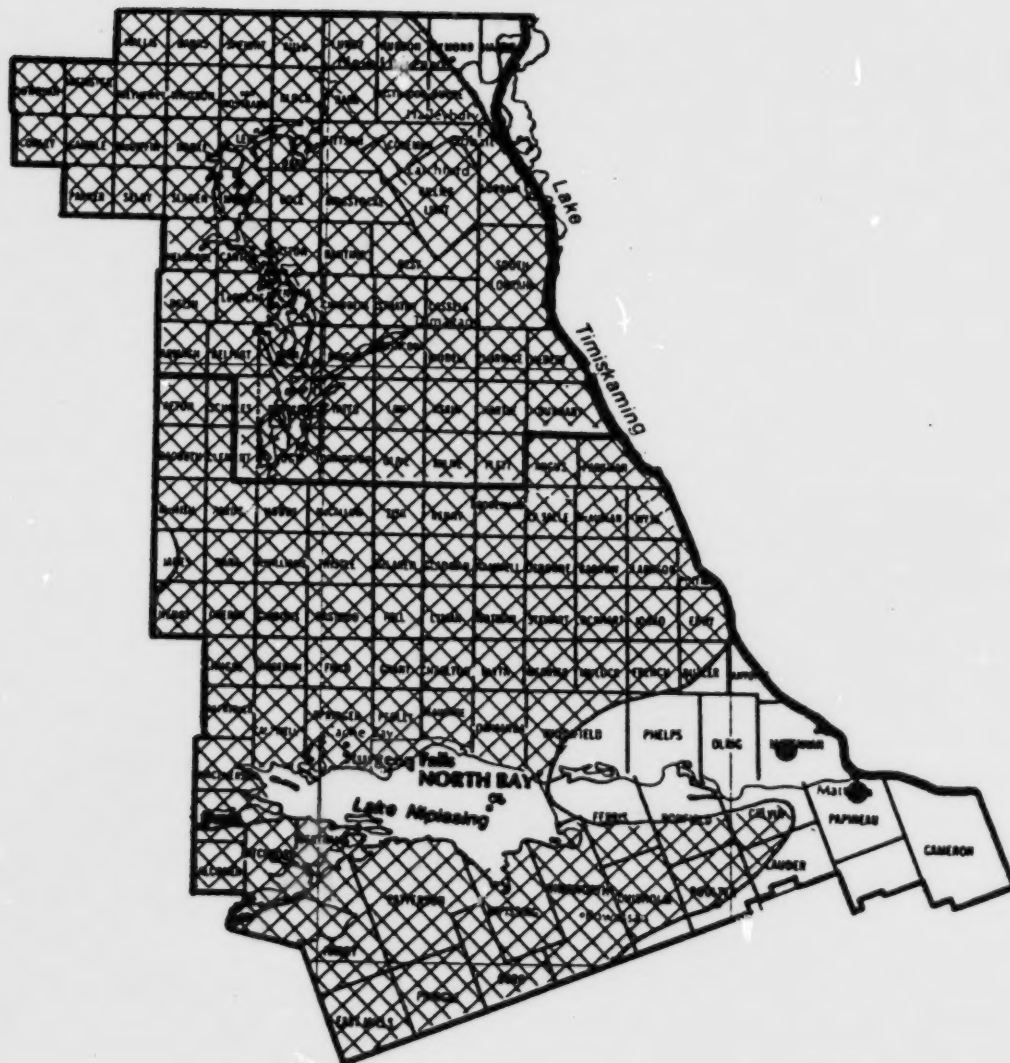
Areas within which whole tree
and top mortality occurred in
1977

LEGEND

Mortality



TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1978

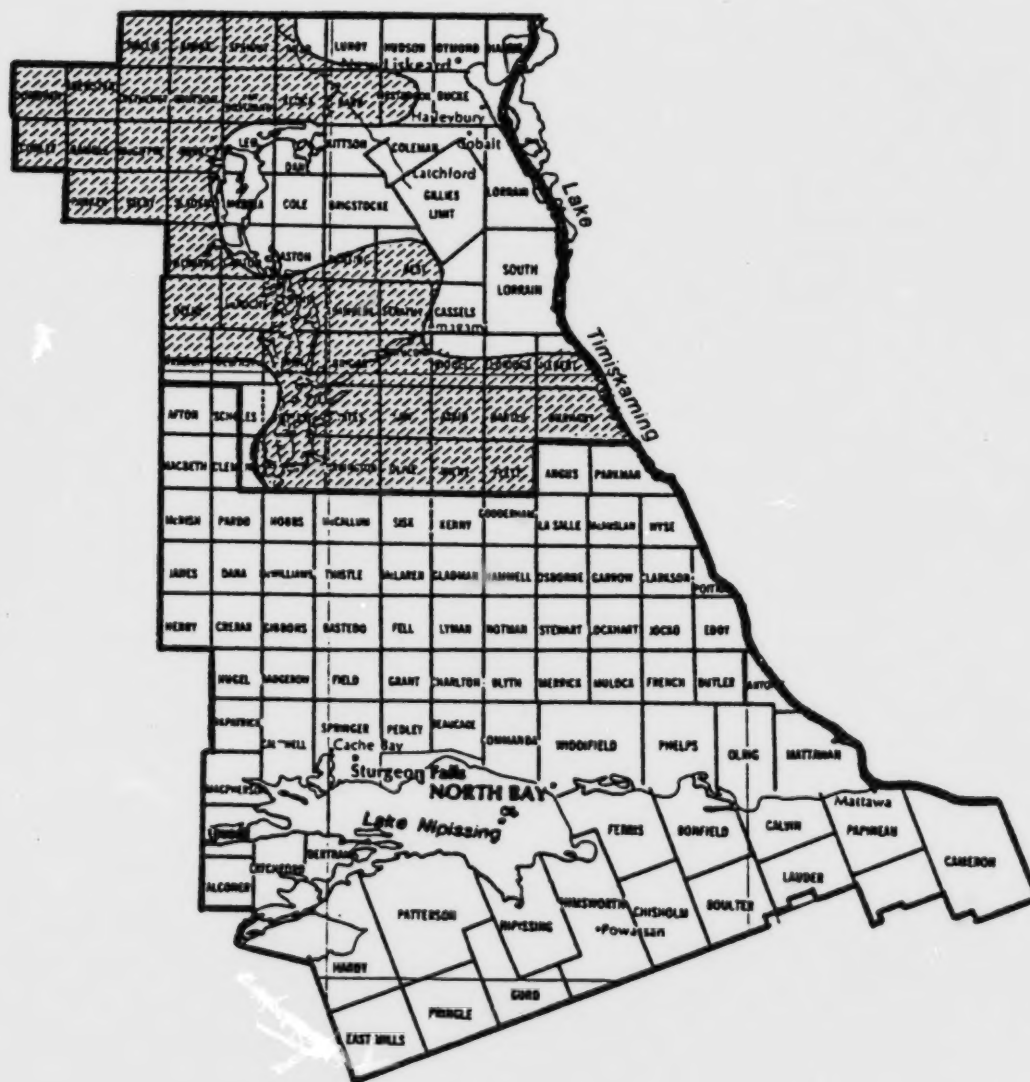
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which whole tree and
top mortality occurred in 1978

LEGEND

Mortality



Scale

Kilometers 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1979

LEGEND

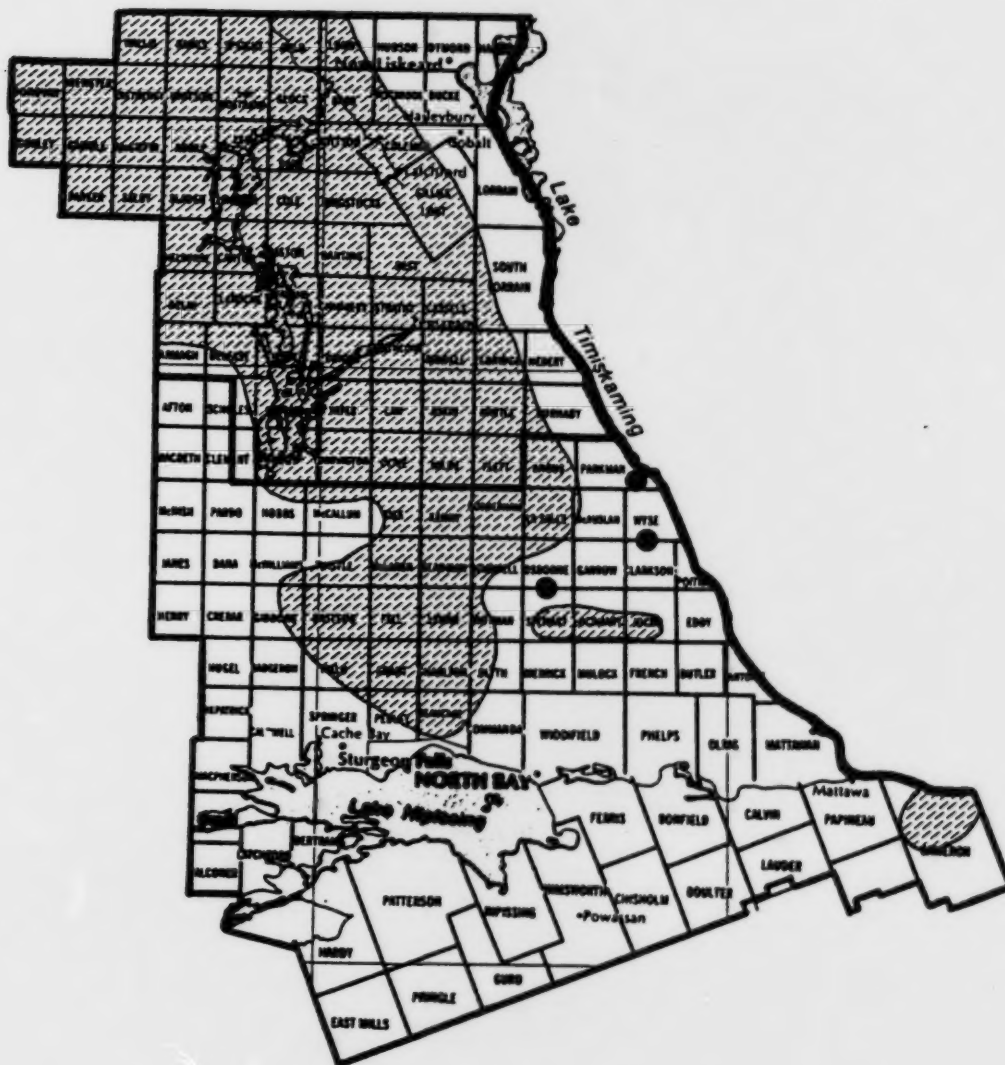
Moderate-to-severe defoliation



Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which whole-tree and
top mortality occurred in 1979

LEGEND

Mortality ● or



Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which defoliation
occurred in 1980

LEGEND

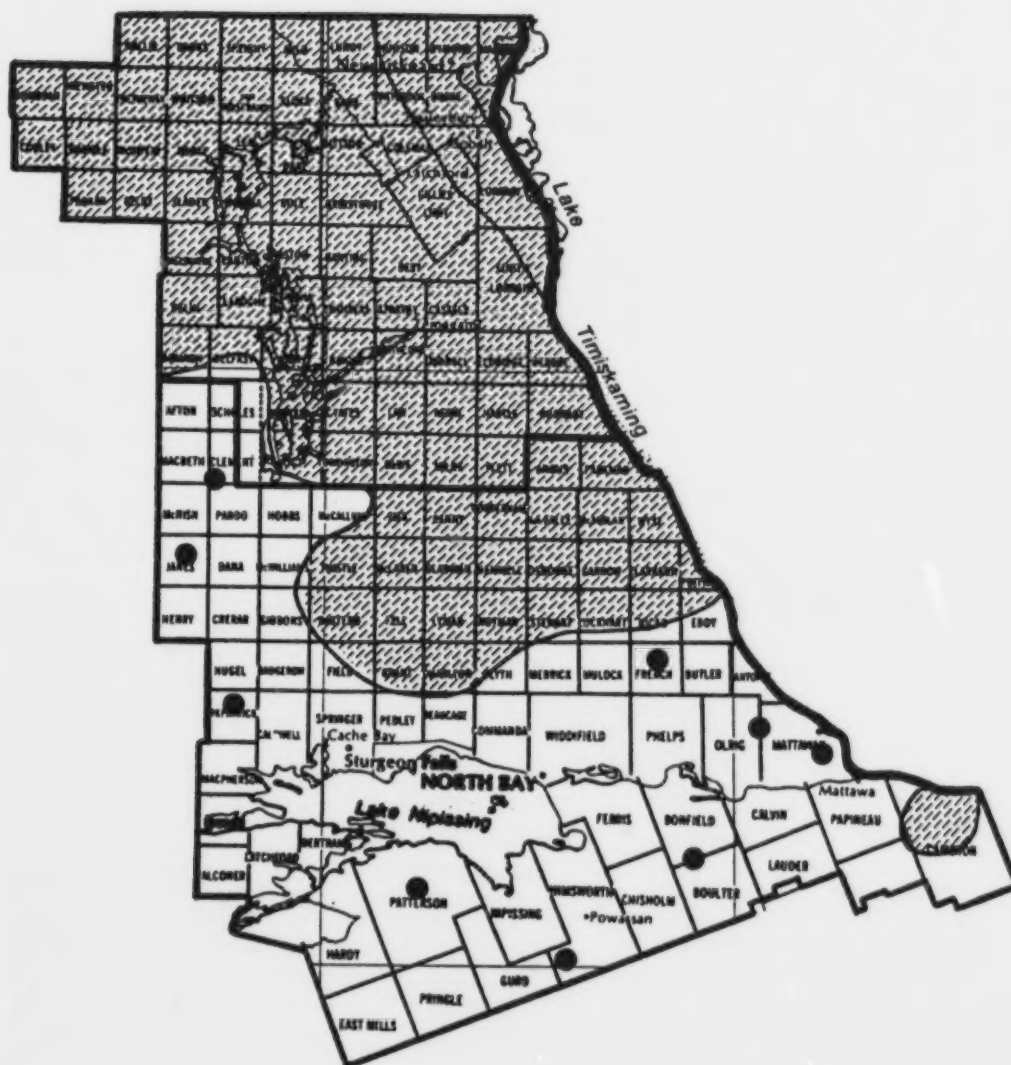
Moderate-to-severe defoliation



Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Spruce Budworm

Areas within which whole-tree
and top mortality occurred in 1980

LEGEND

Mortality ● or 

Scale

Kilometres 20 10 0 20

Larch Casebearer, *Coleophora laricella* (Hbn.)

Host(s): larch

[Major]

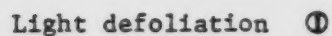
<u>Year</u>	<u>Remarks</u>
1950	A light-to-medium infestation occurred in a small larch stand in Gillies Limit Twp. Small numbers were observed at many other locations in the district.
1951	not reported
1952-1953	Small numbers of larvae were observed at many locations.
1954-1955	not reported
1956-1957	Low populations were observed at many locations in the district.
1958-1961	Populations were confined to the southern half of the district, at a trace level.
1962	A slight increase in population levels and distribution was noted.
1963-1965	Populations remained at much the same low level as in 1962.
1966	Populations increased and caused light defoliation in Gillies Limit, Strathcona and Olive twps.
1967	Populations declined to a low level.
1968-1969	Only small numbers of casebearers could be found.
1970	not reported
1971	low numbers common throughout the district
1972	Populations increased and caused light-to-moderate defoliation in the northern part of the district.
1973	Little change in population levels could be determined over the previous year.
1974	Light defoliation was evident in most larch stands in the district.
1975-1980	not reported

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.)

Host(s): rM, sM

[Major]

<u>Year</u>	<u>Remarks</u>
1950	Pockets of light infestation were observed in Clement, Scholes, Joan, Cynthia and Canton twps (see map, page 47).
1951	Populations remained at much the same level as in 1952.
1952	The population levels of this insect increased and caused moderate-to-severe defoliation in ten twps (see map, page 48).
1953	Population levels and distribution remained much the same as in 1952 (see map, page 49).
1954	Medium-to-heavy infestations and light damage were evident at several locations (see map, page 50).
1955	Population levels of this insect decreased to light intensity, except in Canton and Briggs twps where pockets of moderate-to-severe defoliation were observed (see map, page 51).
1956	Heavy infestations occurred in Gillies Limit Twp (see map, page 52).
1957	Populations declined to light intensity in Gillies Limit Twp (see map, page 53).
1958-1970	not reported
1971	A small pocket of medium-to-heavy infestation was found in Cynthia Twp.
1972-1974	not reported
1975	A small pocket of medium-to-heavy infestation occurred in Coleman Twp.
1976	Populations declined to a trace level.
1977-1980	not reported



TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

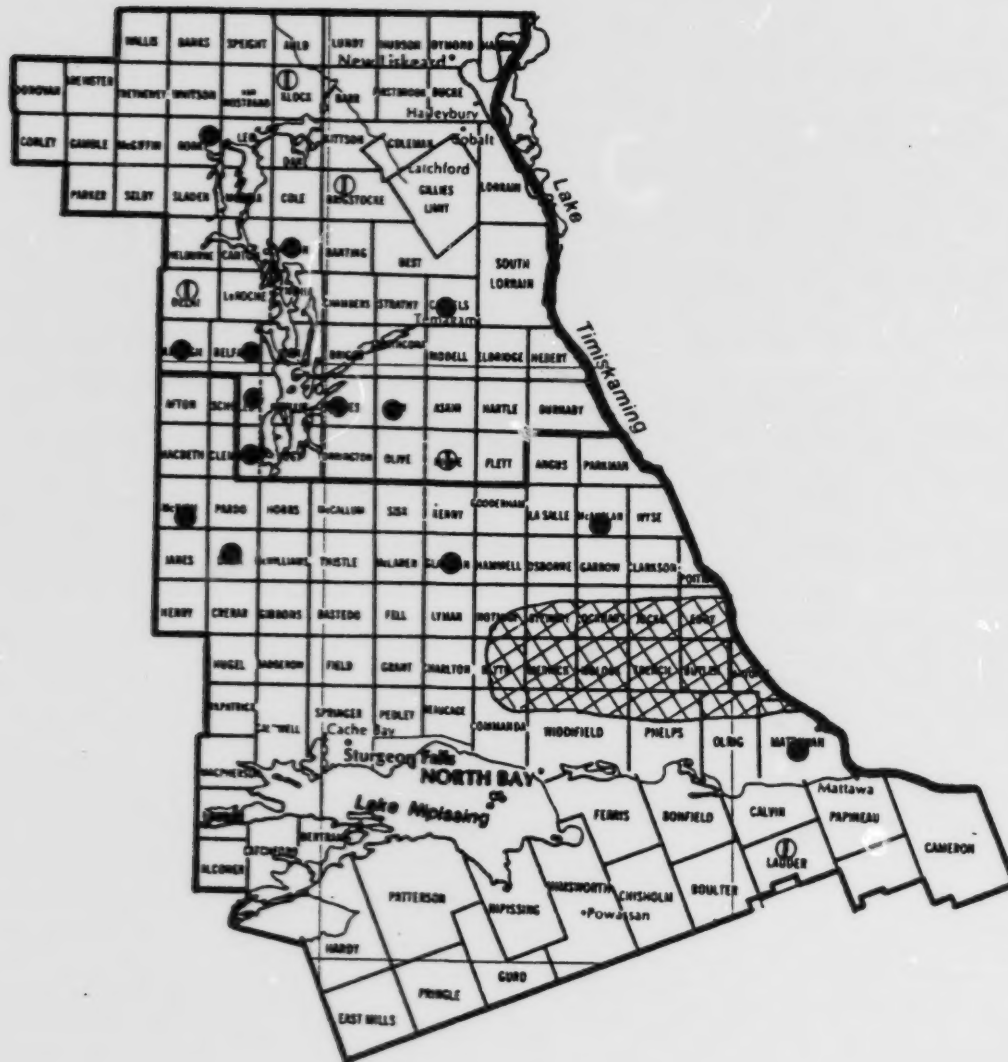
Greenstriped Mapleworm

Areas within which defoliation
occurred in 1952

LEGEND

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Greenstriped Mapleworm

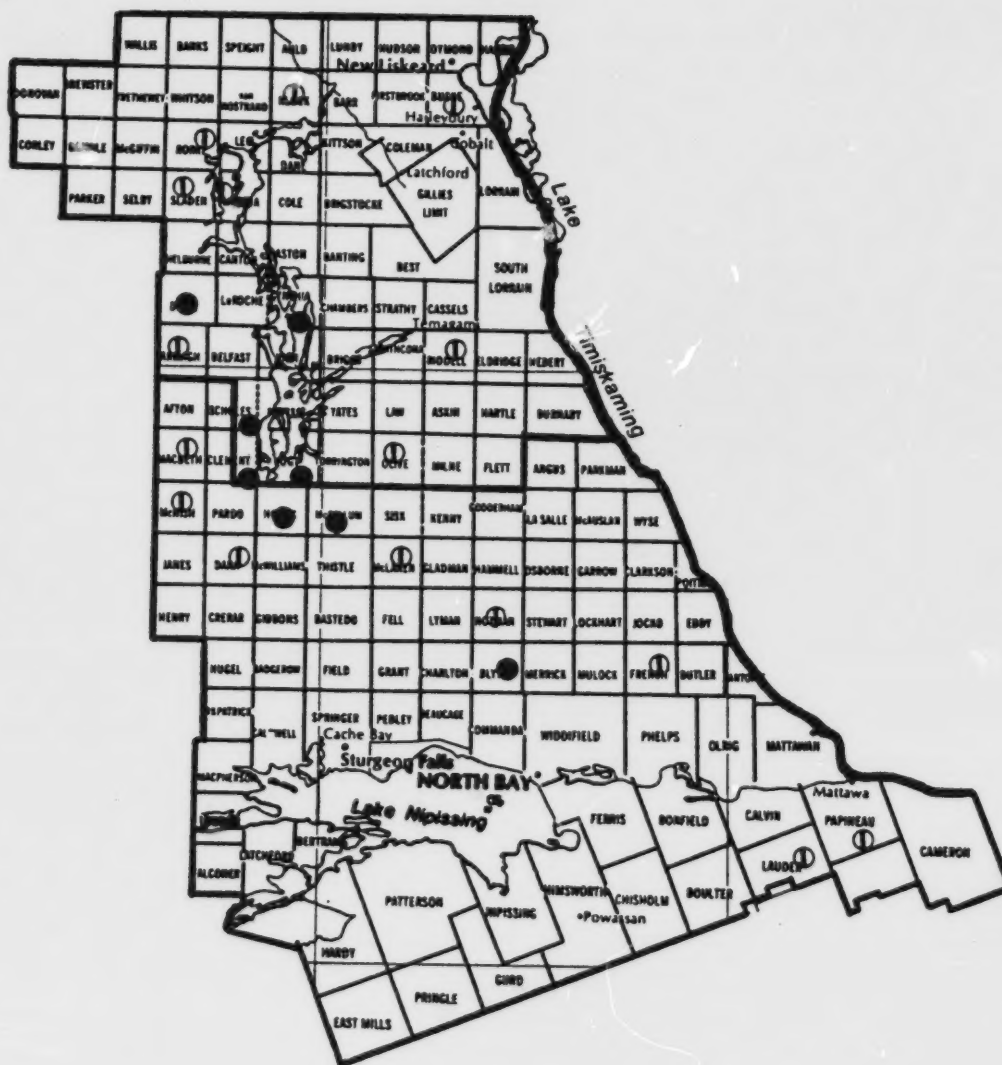
Areas within which defoliation
occurred in 1953

LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20



Scale

Kilometres 20 10 0 20

Light defoliation ①

1

TEMAGAMI AND NORTH BAY DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation
occurred in 1955

LEGEND

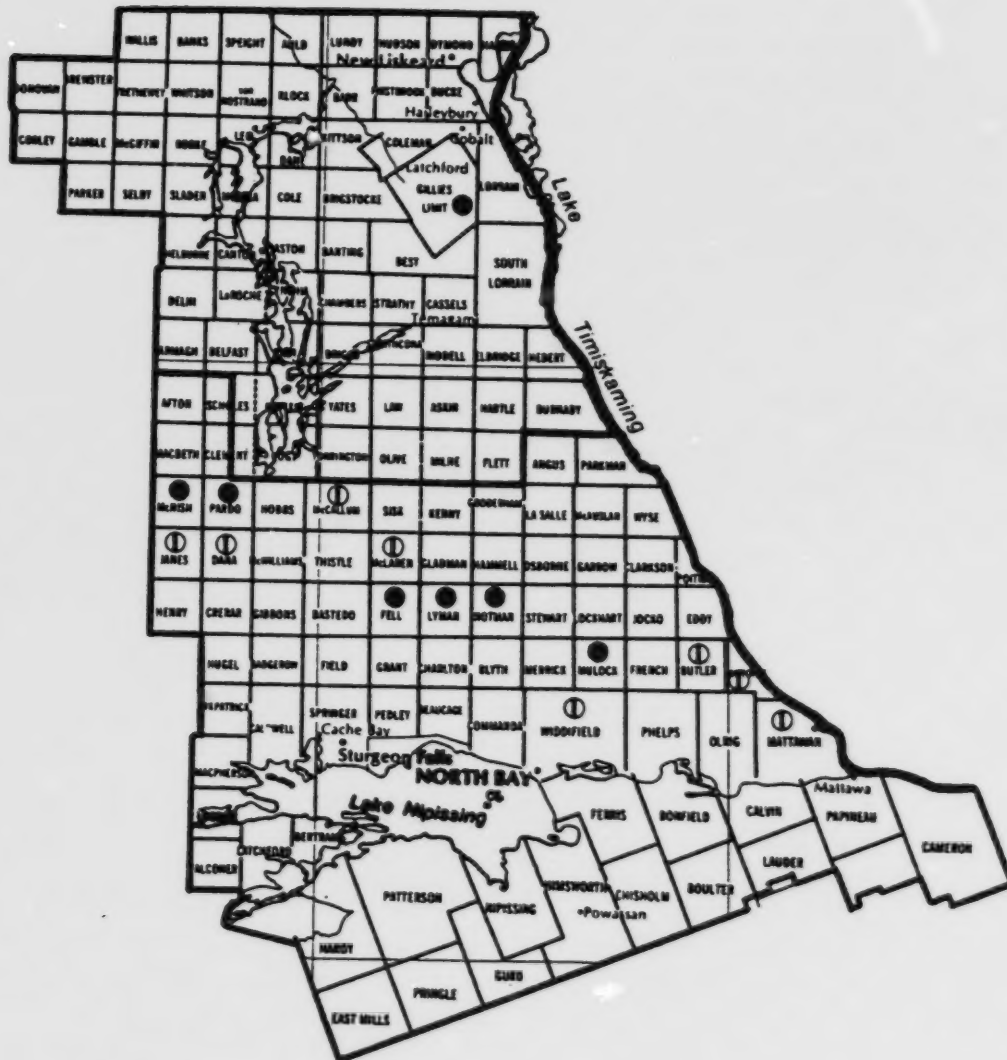
Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation
occurred in 1956

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation
occurred in 1957

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

Birch Leafminer, *Fenusa pusilla* (Lep.)

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960	High populations were observed in white birch regeneration stands in a cutover area in Armagh Twp.
1961	not reported
1962	Light-to-moderate damage was observed at scattered locations in the southern part of the district.
1963-1970	Small pockets of moderate-to-severe damage occurred at numerous locations.
1971	not reported
1972-1975	Severe mining of foliage was evident in small-diameter birch stands at numerous locations.
1976	Populations declined; only light-to-moderate damage was observed at numerous locations in the district.
1977	Severe defoliation caused by first-generation leafminers occurred in Granite Lake Park. Second-generation miners caused severe discoloration of birch trees in Gillies Limit, Strathy, Best and Coleman twps.
1978	not reported
1979-1980	Moderate-to-severe damage was evident at numerous locations.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): deciduous

[Major]

<u>Year</u>	<u>Remarks</u>
1950	Pockets of light and medium-to-heavy infestations were observed at seven and two points, respectively, in the eastern part of the district (see map, page 57).

(cont'd)

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (cont'd)

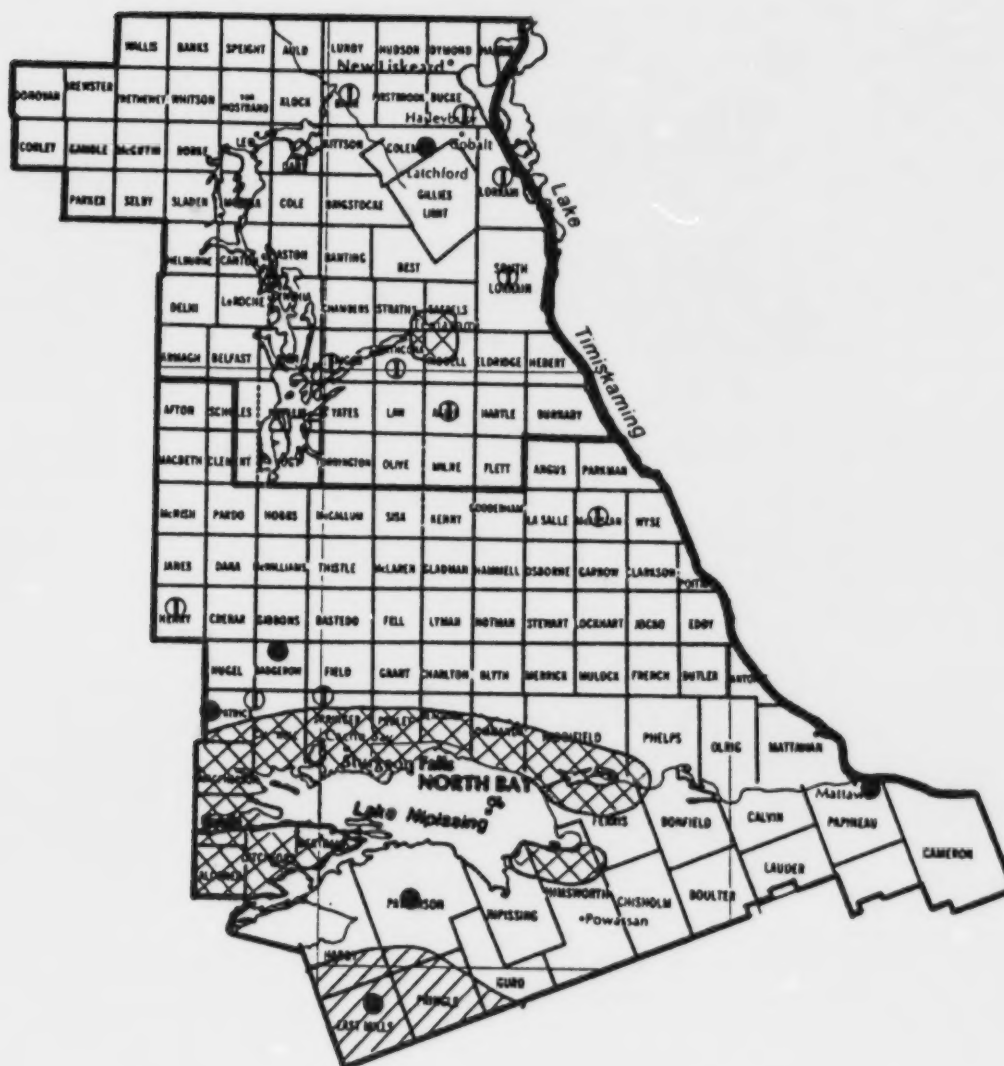
<u>Year</u>	<u>Remarks</u>
1951	Populations increased and caused small pockets of moderate-to-severe defoliation at numerous points in the district (see map, page 58).
1952	Populations continued to increase and caused moderate-to-severe defoliation through the eastern part of the district from a boundary line running northeast from Armagh Twp in the south to Lundy Twp in the northeastern part of the district (see map, page 59).
1953	Populations increased for the third consecutive year and caused moderate-to-severe defoliation throughout the eastern two-thirds of the district (see map, page 60).
1954	A marked decrease in the area of infestation was recorded. Generally moderate-to-severe defoliation was confined to the northeastern two thirds of the district east of a line running from Armagh Twp, northwest to Wallis Twp in the northwestern part of the district (see map, page 61). A parasite fly, <i>Sarcophaga aldrichi</i> Parl., was responsible for much of this decline: examination of caterpillar cocoons revealed that more than 90% of them were destroyed by the parasite in some areas.
1955	The area of infestation decreased for the second consecutive year. Moderate-to-severe defoliation was generally confined to the northeastern part of the district lying north of the town of Latchford. Light defoliation was evident at scattered points elsewhere (see map, page 62). A high incidence of cocoon parasitism recurred.
1956	The area of infestation decreased for the third consecutive year. Only small pockets of moderate-to-severe defoliation were left within a larger area of light-to-moderate damage in the northeastern part of the district (see map, page 63).
1957	Populations continued to decrease. A small area of light-to-moderate defoliation was left in the northeastern corner of the district (see map, page 64).

(cont'd)

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (concl.)

<u>Year</u>	<u>Remarks</u>
1958-1959	not reported
1960	Small numbers were observed at Metagama Point on Lake Temagami.
1961	not reported
1962	Small numbers of caterpillar colonies were observed in Phyllis and Joan twps.
1963-1971	not reported
1972	A small pocket of heavy infestation was found in Dymond Twp in the northeastern corner of the district.
1973	The area of heavy infestation expanded through several twps in the northeastern part of the district (see map, page 65).
1974	The area of heavy infestation continued to expand and caterpillars caused moderate-to-severe defoliation in the northeastern part of the district (see map, page 66).
1975	There was little change over the previous year in the area of infestation (see map, page 67).
1976	The infestation collapsed. Only one small pocket of moderate-to-heavy infestation was left in Lorrain Twp (see map, page 68).
1977-1978	The small medium-to-heavy infestation persisted in the northeastern part of the district (see maps, pages 69-70).
1979-1980	not reported.

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1950

LEGEND

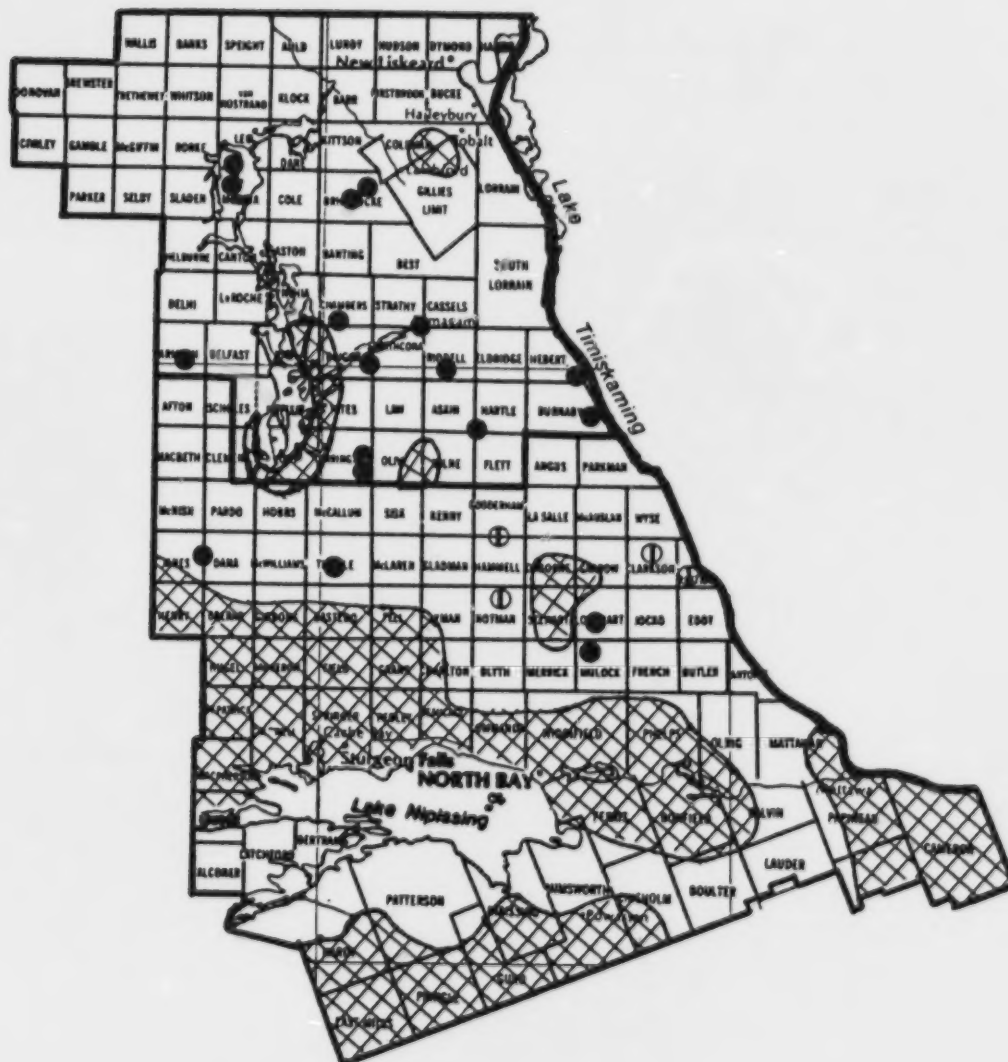
Light defoliation ① or 

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 30 10 0 20

Forest Tent Caterpillar

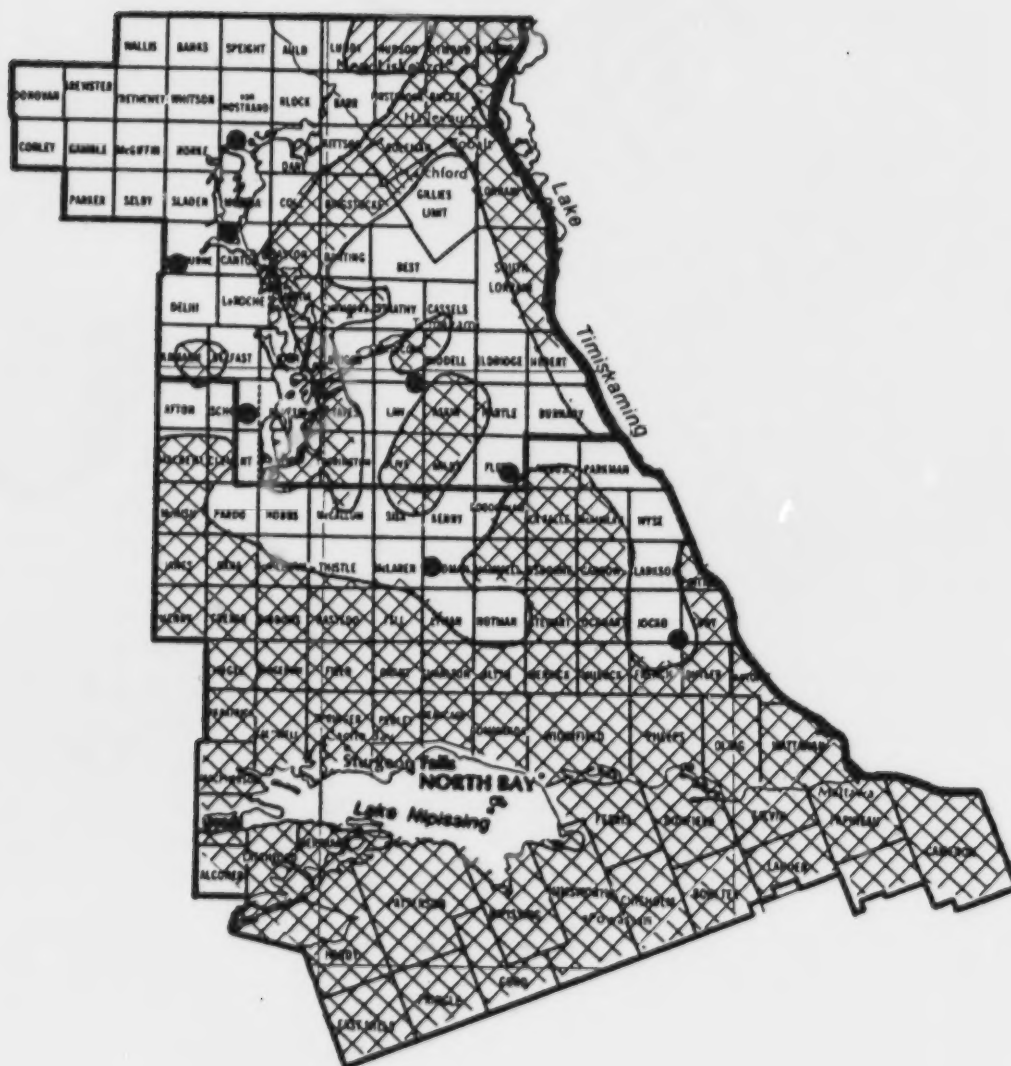
Areas within which defoliation
occurred in 1951

LEGEND

Moderate-to-severe defoliation ● or



TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1952

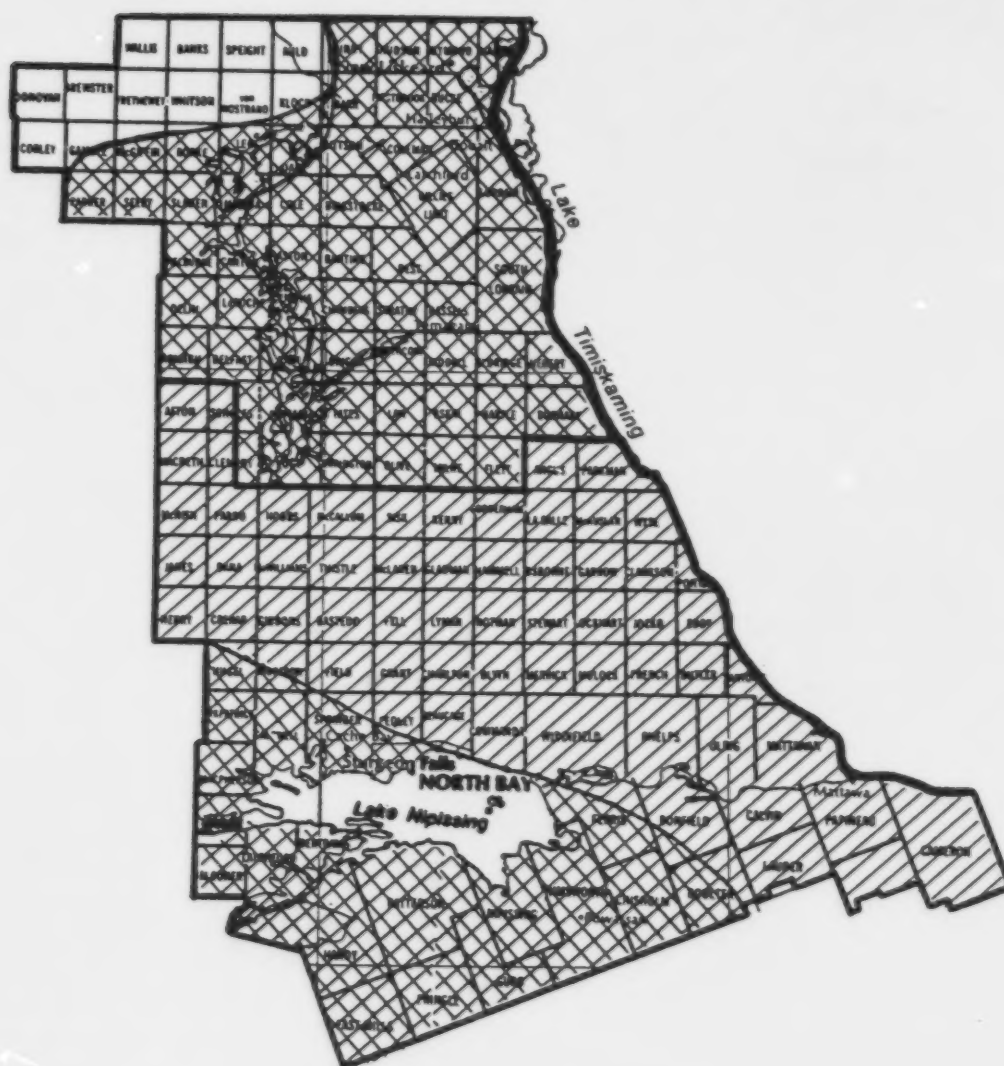
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

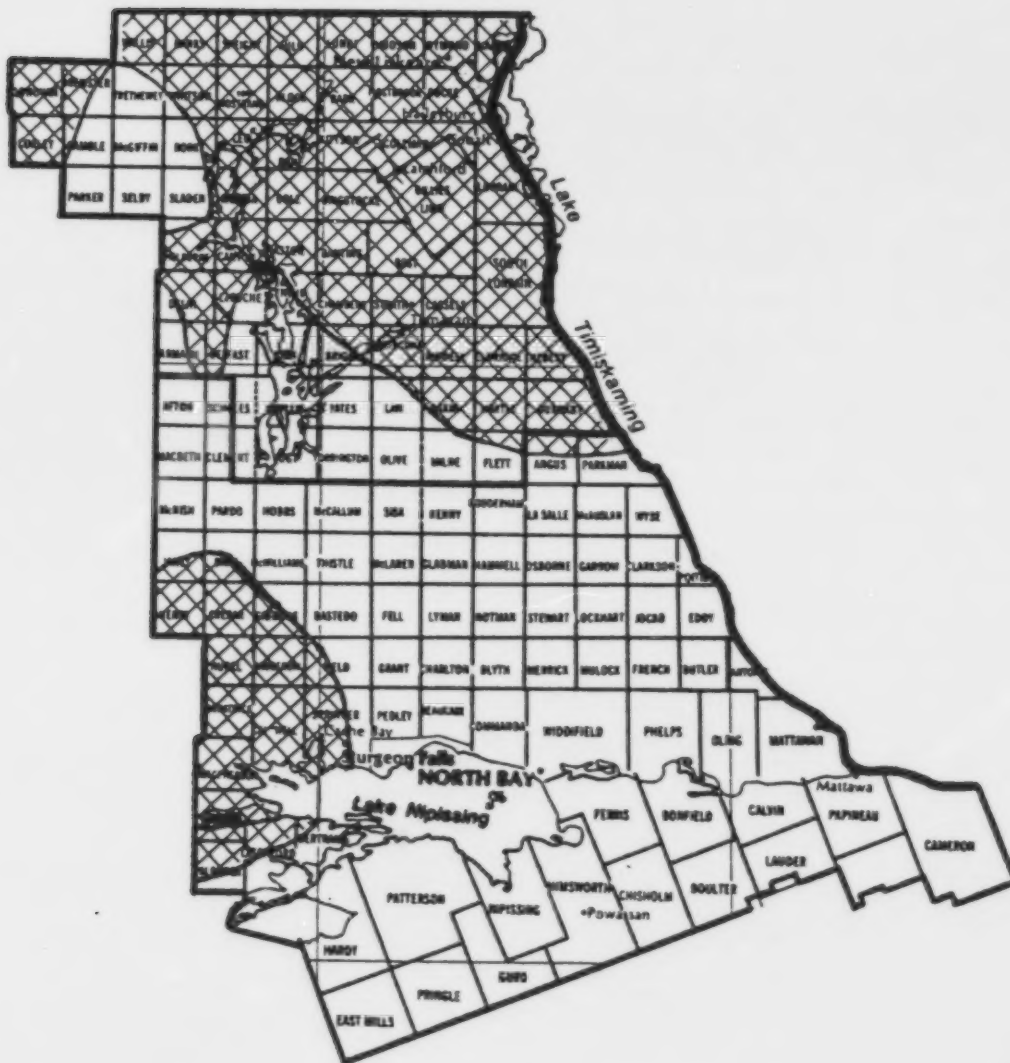
LEGEND

Light defoliation ① or 
 Moderate-to-severe defoliation ● or 

Scale

Kilometres 

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Forest Tent Caterpillar

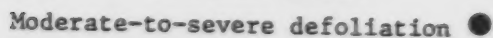
Areas within which defoliation
occurred in 1954

LEGEND

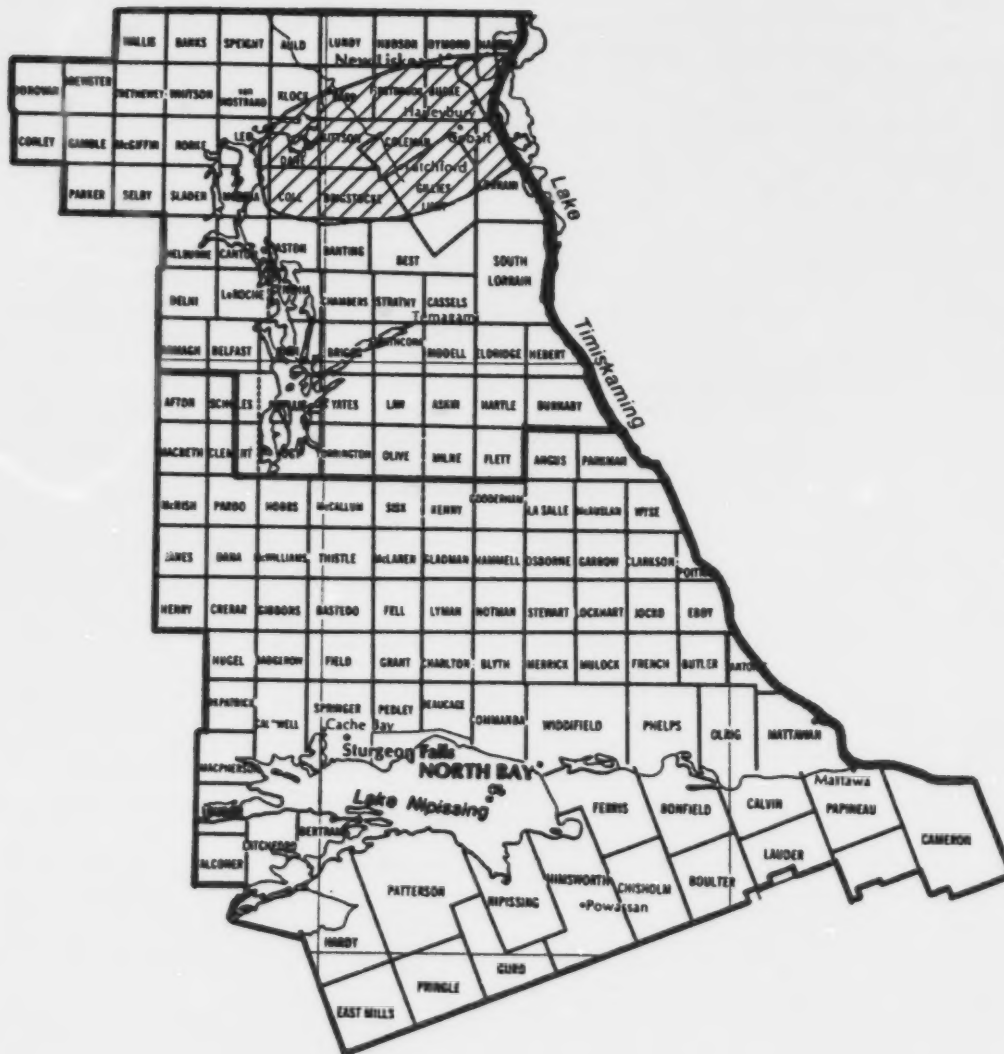
Moderate-to-severe defoliation







TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1957

LEGEND

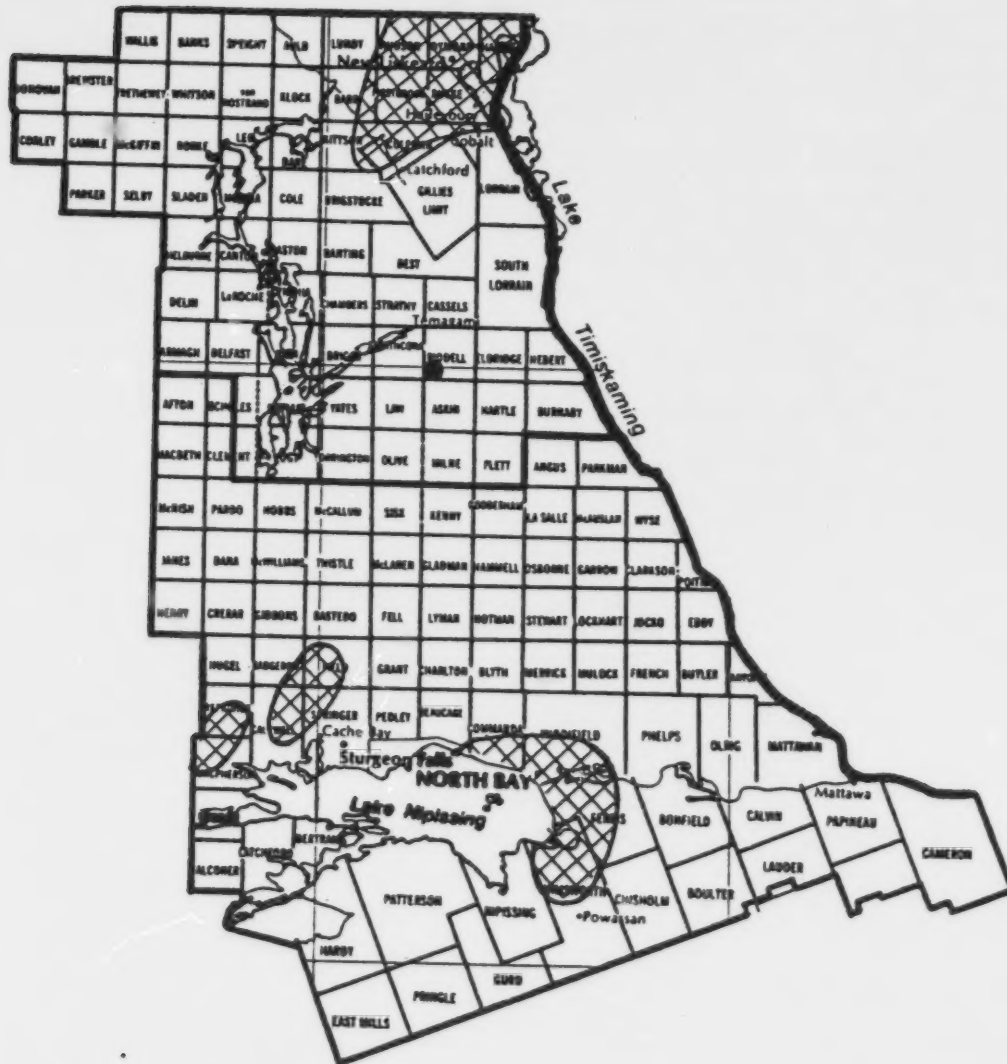
Light-to-moderate defoliation



Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1973

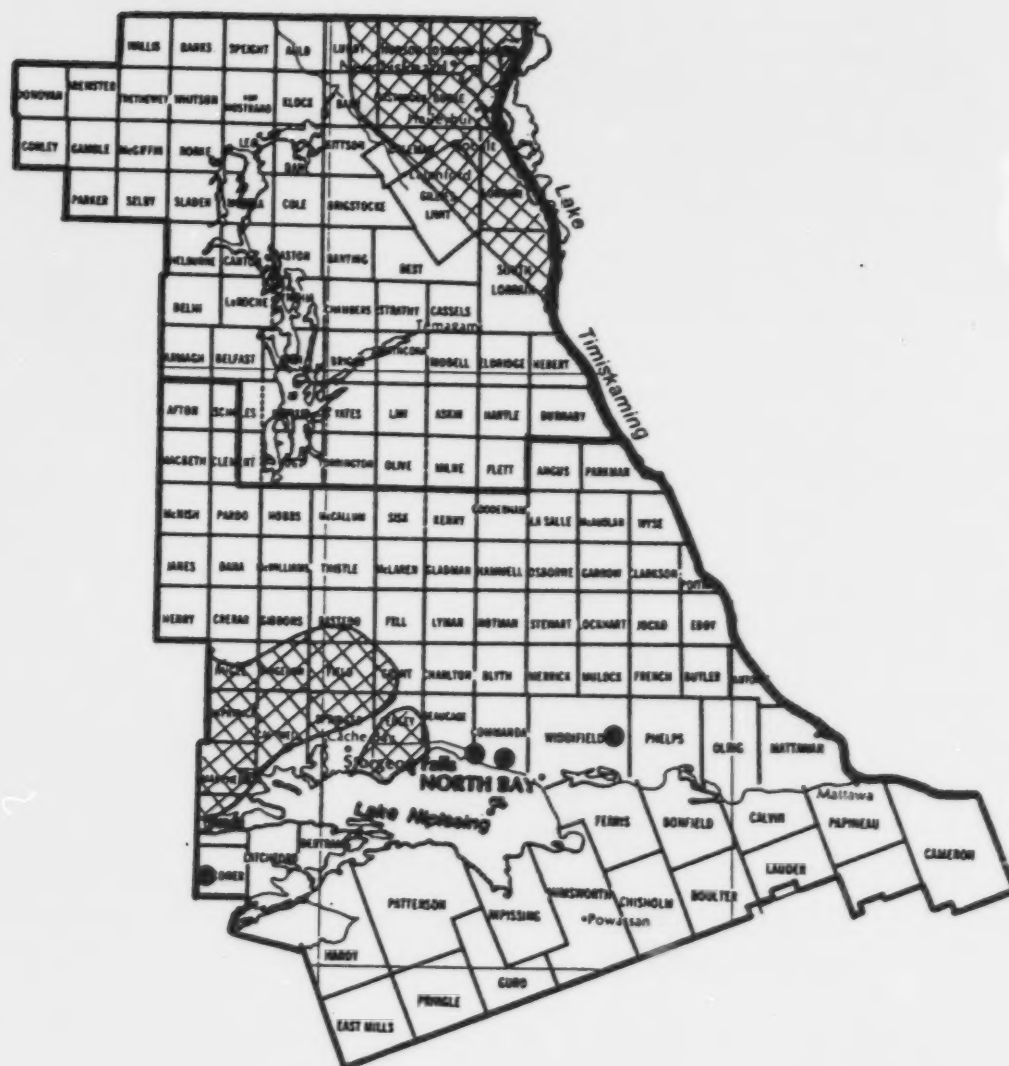
LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



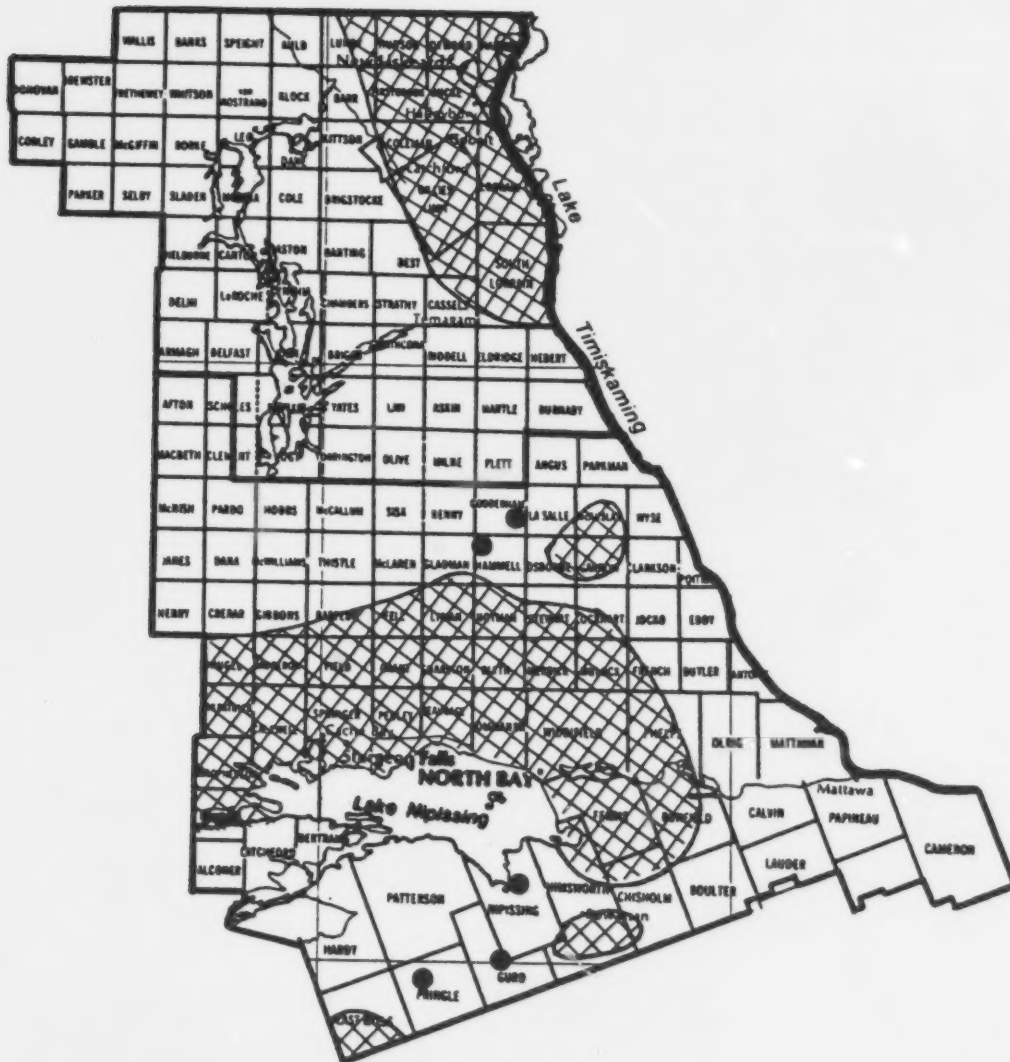
Forest Tent Caterpillar

Areas within which defoliation
occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or 

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or 

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1978

LEGEND

Moderate-to-severe defoliation



Scale

Kilometres 20 10 0 20

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host(s): bF, wS, bS

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	Low numbers of larvae were observed at widely scattered locations.
1953	Pockets of light infestation were observed in Olive, South Lorrain and Briggs twps.
1954	not reported
1955	Only trace populations could be found.
1956	not reported
1957	Low populations were observed on balsam fir, black spruce and white spruce at widely separated points.
1958-1961	not reported
1962	Low numbers of larvae were taken in beating samples from Gillies Limit, Best and Lorrain twps.
1963	not reported
1964	A trace population was observed in Strathcona and Strathy twps.
1965	Low numbers were collected in Cynthia Twp.
1966-1971	not reported
1972	low numbers of larvae found in beating samples at widely scattered locations.
1973-1980	not reported

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Host(s): pine

[Major]

<u>Year</u>	<u>Remarks</u>
1950	A low population was found on red pine trees in Strathcona Twp.
1951-1952	not reported
1953	Larval colonies were observed at widely separated locations.
1954	A sharp increase in the population of the sawfly was noted in the Temagami area where approximately 30% of understory red pine trees were infested.
1955-1956	Medium populations persisted on red pine understory trees in the Temagami area.
1957	Populations declined to a low level in the Temagami area.
1958	Populations increased and caused moderate-to-severe defoliation on small, open-grown red pine trees along Highway 11, south of Temagami and in the south arm of Lake Temagami.
1959	A heavy infestation persisted on an island in the south arm of Lake Temagami.
1960	Populations declined to a few scattered colonies. Low numbers were observed in Askin and Strathcona twps and on an island in the south arm of Lake Temagami.
1961	not reported
1962	Scattered larval colonies were observed in Strathcona, Briggs and Yates twps.
1963	Low numbers of colonies persisted in Briggs and Strathcona twps. Scattered colonies were also found in Milne Twp.
1964-1965	Scattered colonies were observed on small-diameter red pine trees on two islands in Lake Temagami.

(cont'd)

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch) (concl.)

<u>Year</u>	<u>Remarks</u>
1966-1967	Small numbers of colonies occurred in Brigstocke Twp and on islands in Lake Temagami.
1968	Populations declined to a trace level.
1969	Populations remained at a trace level.
1970-1980	not reported

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950	Pockets of light infestation on jack pine were recorded at 15 scattered locations in the western two thirds of the district (see map, page 77).
1951	Little change in population levels or distribution could be determined over the previous year; only light damage could be found.
1952	Light infestations persisted within jack pine stands in the Temagami and Lady Evelyn lakes areas and in Banks Twp. Occasional small areas of moderate-to-severe defoliation were observed along lakeshores at Temagami and Lady Evelyn lakes.
1953	Populations increased and caused moderate-to-severe defoliation at numerous locations. Light-to-moderate damage was evident in several jack pine stands as well (see map, page 78).
1954	Generally, populations of the sawfly decreased to light intensity; however, increases were recorded in Eldridge and Gillies Limit twps and heavy infestations persisted in the Makobe and Banks lakes area. Moderate-to-severe defoliation was evident on small-diameter trees at each of the above locations.

(cont'd)

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd. (cont'd)

<u>Year</u>	<u>Remarks</u>
1955	Pockets of medium-to-heavy infestation were observed at ten points in the vicinity of Temagami, Lady Evelyn, Makobe and Banks lakes. Light infestations were recorded at several points elsewhere (see map, page 79).
1956	Generally populations decreased to light intensity, except in Eldridge and Banks twps where pockets of medium-to-heavy infestation persisted (see map, page 80).
1957	Populations remained at much the same level as in the previous year. Pockets of medium-to-heavy infestation recurred in Eldridge Twp and in the Makobe-Banks lakes area (see map, page 81).
1958	No appreciable change in population levels could be determined. Medium-to-heavy infestations persisted in Eldridge Twp and in the Makobe-Banks lakes area (see map, page 82).
1959	Populations increased markedly. New medium-to-heavy infestations were observed in Leo, Cynthia, Joan, Briggs and Law twps. Heavy damage recurred in Eldridge Twp and in the Banks Lake area where moderate-to-severe defoliation was observed on trees in all diameter classes (see map, page 83).
1960	There was a general decline in population levels, except in Eldridge Twp and in the Banks Lake area where moderate-to-severe defoliation recurred (see map, page 84). Some tree mortality has occurred in the above areas.
1961	Populations remained at approximately the same level as in 1960. Moderate-to-severe defoliation recurred in the infested areas in Eldridge Twp and at Banks Lake.
1962	Medium-to-heavy infestations persisted in Eldridge Twp and in the Banks Lake Area. Elsewhere a downward trend in population levels was evident: only low numbers of larval colonies could be found.
1963	The downward trend in population levels continued in 1962. Infestations which had persisted in Eldridge Twp and in the Banks Lake area for several years declined to small numbers of colonies. Elsewhere only scattered colonies could be found.

(cont'd)

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd. (cont'd)

<u>Year</u>	<u>Remarks</u>
1964	Small numbers of larval colonies persisted and caused light defoliation in Eldridge Twp and in the Banks Lake area. Very few colonies could be found elsewhere in the district.
1965	Light-to-moderate defoliation recurred in Eldridge Twp and in the Banks Lake area. Elsewhere only scattered colonies could be found. Repeated defoliation of host trees on islands in Rabbit Lake, Eldridge Twp has caused extensive mortality.
1966	Small, heavy infestations were present on two islands in Temagami and Rabbit lakes. Small numbers of colonies were observed in the Banks Lake area and in Joan, Cynthia, Briggs and Strathcona twps.
1967	Small heavy infestations persisted on two islands in Temagami and Rabbit lakes. Host trees in the Rabbit Lake infestation were severely defoliated. Small numbers of colonies were observed at scattered points elsewhere.
1968	Small, heavy infestations persisted and caused moderate-to-severe defoliation on islands in Temagami and Rabbit lakes. Only small numbers of colonies could be found elsewhere.
1969	Population levels remained much the same as in 1968. Moderate-to-severe defoliation recurred on islands in Temagami and Rabbit lakes. Scattered colonies were observed at a small number of points elsewhere.
1970	A marked increase in population levels occurred in 1970. A heavy infestation was discovered in Klock and van Nostrand twps where approximately 118 ha of pole-size jack pine were moderately to severely defoliated. Heavy infestations were also recorded in the Makobe-Banks lakes area. Considerable top killing has occurred in both areas. Elsewhere, populations generally remained at a low level.
1971	Heavy infestations persisted, although defoliation was less severe in some areas. Substantial mortality of jack pine is evident in Wallis, Banks, Whitson and Klock twps. South of this area on Lady Evelyn, Temagami and Rabbit lakes, island and shoreline stands were severely defoliated.

(cont'd)

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd. (concl.)

<u>Year</u>	<u>Remarks</u>
1972	The intensity and extent of Swaine sawfly infestations remained relatively unchanged over the previous year. Jack pine trees on islands and shorelines were again severely defoliated on Lady Evelyn, Temagami and Rabbit lakes.
1973	Small areas of heavy infestation were noted at many points. Jack pine stands on shorelines and islands were severely defoliated on Banks, Lady Evelyn, Temagami and Rabbit lakes.
1974	The sawfly again caused appreciable defoliation of jack pine stands on lakeshores and islands in Banks, Lady Evelyn, Willow Island and Temagami lakes.
1975	This sawfly continued to cause severe defoliation of host trees on islands and along shorelines of numerous lakes in the northern part of the district. Repeated defoliation has caused appreciable tree mortality throughout the infested area.
1976-1977	Population levels remained high. Moderate-to-severe defoliation occurred in jack pine stands along shorelines and on islands in numerous lakes.
1978	Heavy infestations of this sawfly continued to cause moderate-to-severe defoliation in the Makobe-Banks lakes area. Repeated defoliation has caused considerable tree mortality along shorelines in the area as well as dead tops within the stands. Lightly defoliated trees were observed at numerous points elsewhere in the district.
1979	Heavy infestations persisted in the Makobe-Banks lakes area, and caused moderate-to-severe defoliation and appreciable tree mortality in the area. Light defoliation was observed on shorelines at numerous locations as well.
1980	Heavy infestations recurred in the Makobe-Banks lakes area and caused moderate-to-severe defoliation through approximately 325 ha of forested land. A second infestation in van Nostrand and Klock twps is causing serious damage through 450 ha of immature jack pine. Appreciable tree and top mortality is evident in the area.

(cont'd)

TEMAGAMI AND NORTH BAY DISTRICTS



Swaine Jack Pine Sawfly

Areas within which defoliation
occurred in 1950

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation ①

TEMAGAMI AND NORTH BAY DISTRICTS



Swaine Jack Pine Sawfly

Areas within which defoliation
occurred in 1953

Scale

Kilometres 0 10 20

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Swaine Jack Pine Sawfly

Areas within which defoliation
occurred in 1955

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Swaine Jack Pine Sawfly
Areas within which defoliation
occurred in 1956

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0



Areas within which defoliation occurred in 1957

Kilometres 20 10 0

Light defoliation ①

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Swaine Jack Pine Sawfly

Areas within which defoliation
occurred in 1958

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20



Areas within which defoliation
occurred in 1959

Light defoliation ①

Moderate-to-severe defoliation ●

Scale



TEMAGAMI AND NORTH BAY DISTRICTS



Swaine Jack Pine Sawfly

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. virginianus* complex

Host(s): jP, rP

[Major]

<u>Year</u>		<u>Remarks</u>
1950	<i>N. virginianus</i>	low numbers were observed in Lundy, Hudson, Coleman, Aston, LeRoche and Briggs twp.
1951	<i>N. virginianus</i> complex	low numbers occurred in Hudson Twp and at scattered points in the Temagami-Lady Evelyn lakes area.
	<i>N. nanulus nanulus</i>	Scattered larval colonies were observed in Hudson and Gamble twps.
1952		not reported
1953	<i>N. virginianus</i> complex	Colonies were found commonly in the Lady Evelyn-Temagami lakes area. A very low population was noted in Banks Twp.
	<i>N. pratti banksianae</i>	A small pocket of medium infestation occurred on immature jack pine trees in Askin Twp. Light damage was evident on mature trees in the area. Small numbers of colonies were observed at numerous points elsewhere in the district.
1954	<i>N. pratti banksianae</i>	Population levels decreased to light intensity in Askin Twp; defoliation was negligible in the area. Low numbers were observed at scattered points elsewhere.
	<i>N. nanulus nanulus</i>	Pockets of light infestation occurred in South Lorrain, Gillies Limit, Best, van Nostrand, Vogt, Phyllis and LeRoche twps.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. virginianus* complex (cont'd)

<u>Year</u>		<u>Remarks</u>
1955	<i>N. virginianus</i> complex	low numbers of colonies observed at widely separated points
	<i>N. pratti banksianae</i>	Populations decreased to a very low level.
1956	<i>N. virginianus</i> complex	Population levels remained at a low ebb.
	<i>N. nanulus nanulus</i>	Low numbers of colonies were observed in the Lady Evelyn Lake area and in Coleman Twp.
1957	<i>N. pratti banksianae</i>	Populations were at an extremely low ebb.
	<i>N. nanulus nanulus</i>	Scattered colonies occurred in the Lady Evelyn Lake area. Elsewhere in the district colonies were rarely observed.
1958	<i>N. pratti banksianae</i>	An increase in population levels occurred; colonies were observed at numerous points in the district.
	<i>N. virginianus</i> complex	Light defoliation was observed on small groups of open-grown trees in Strathcona, Askin, Gillies Limit and Barr twps.
1959	<i>N. pratti banksianae</i>	Colonies were commonly observed in jack pine stands on the west side of Temagami Lake; defoliation was negligible.
	<i>N. virginianus</i> complex	Light infestations were observed on small jack pine trees along roadsides and lakeshores in Strathcona, Askin, Gillies Limit and Barr twps.
1960	<i>N. pratti banksianae</i>	Several colonies were observed in jack pine stands in Chambers, Strathy and Clement twps, but defoliation was negligible.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. virginianus* complex (cont'd)

<u>Year</u>		<u>Remarks</u>
1960	<i>N. virginianus</i> complex	Scattered colonies were observed on open-grown trees in Strathcona, Askin, Gillies Limit and Barr twps. No important defoliation resulted.
1961	<i>N. pratti banksianae</i>	Small numbers of colonies were observed on islands in Temagami Lake.
	<i>N. virginianus</i> complex	Low populations were noted in Strathcona, Askin and Barr twps.
	<i>N. nanulus nanulus</i>	Populations were at a low level in each of seven areas in the vicinity of Temagami Lake where larval colonies were observed.
1962	<i>N. pratti banksianae</i>	Populations increased and caused light defoliation of jack pine trees on several islands and shorelines of Temagami Lake.
	<i>N. virginianus</i> complex	Low numbers were observed at six widely separated locations.
	<i>N. nanulus nanulus</i>	Small pockets of light infestation occurred in Armagh, Cynthia and Briggs twps. Trace populations were observed in Hudson and Dymond twps.
1963	<i>N. pratti banksianae</i>	Colonies of the sawfly were found commonly along lakeshores and on islands in Rabbit, Timiskaming, Temagami and Banks lakes.
	<i>N. nanulus nanulus</i>	A general increase in population levels of the sawfly was evident in Briggs, Cynthia, Armagh and Joan twps.
	<i>N. virginianus</i> complex	Small numbers were observed in Strathy Twp.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. virginianus* complex (cont'd)

<u>Year</u>		<u>Remarks</u>
1964	<i>N. pratti banksianae</i>	A high population caused moderate-to-severe defoliation in Armagh Twp. Colonies of the sawfly occurred commonly in jack pine stands along shorelines and on islands in Rabbit and Temagami lakes.
	<i>N. nanulus nanulus</i>	Little change occurred in the population levels over the previous year. Colonies of the sawfly were found commonly in Cynthia, Joan and Armagh twps.
1965	<i>N. pratti banksianae</i>	Populations declined abruptly and only scattered colonies could be found along shorelines and on islands in Rabbit, Banks, Obabika and Temagami lakes.
	<i>N. nanulus nanulus</i>	Few sawfly larval colonies could be found on Lake Temagami where colonies were common on shoreline stands and on islands in 1963 and 1964.
1966	<i>N. pratti banksianae</i>	Scattered colonies were observed in jack pine stands in Scholes Twp and along shorelines and on islands in Rabbit, Cross and Temagami lakes.
	<i>N. nanulus nanulus</i>	A general increase in population levels was evident; colonies were found commonly on shorelines and islands in lakes Timiskaming and Temagami.
	<i>N. virginianus</i> complex	Colonies of this sawfly were found commonly at numerous locations. Defoliation was generally confined to small trees on fringes of stands on rocky sites.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. virginianus* complex (cont'd)

<u>Year</u>		<u>Remarks</u>
1967	<i>N. pratti banksianae</i>	Scattered colonies were observed along shorelines and on numerous islands in Lake Temagami.
	<i>N. nanulus nanulus</i>	Populations remained at much the same level as in 1966. Colonies were common on shorelines and islands in lakes Timiskaming and Temagami.
	<i>N. virginianus</i> complex	Small numbers of larval colonies were widely distributed through the district.
1968	<i>N. nanulus nanulus</i>	Little change in populations of this sawfly occurred. Colonies were found commonly in numerous stands, particularly on shorelines and on islands in Lake Temagami.
	<i>N. virginianus</i> complex	Populations increased and caused light defoliation on small trees at numerous locations.
1969	<i>N. nanulus nanulus</i>	A general decline in population levels occurred. Only trace populations could be found.
	<i>N. virginianus</i> complex	Colonies of this sawfly were found in numerous jack pine stands. Small trees were lightly defoliated in many areas.
1970-1974		not reported
1975	<i>N. virginianus</i> complex	High populations caused moderate-to-severe defoliation in jack pine stands at several points in Barr, Firstbrook and Hudson twps.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. virginianus* complex (concl.)

<u>Year</u>		<u>Remarks</u>
1976	<i>N. virginianus</i> complex	Populations declined to low numbers throughout the district.
1977-1980		not reported

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	High populations caused moderate-to-severe leafmining throughout the district.
1953	High populations persisted, however, the distribution was scattered in comparison with that of the previous year. This condition is likely the result of heavy forest tent caterpillar infestations in some stands.
1954	Populations declined, and only small isolated, medium-to-heavy infestations were left at a few points.
1955-1956	Populations continued to decline and reached a low level.
1957-1959	Low numbers were observed at widely separated points.
1960	Populations increased; light infestations were observed in the southern part of the district.
1961	Populations increased for the second consecutive year; light infestations were observed at scattered locations.
1962	Little change in population levels occurred; light infestations persisted.
1963	Populations declined to a trace level throughout the district.
1964	An increase in populations was evident when high populations were found on small open-grown aspens at a few points.

(cont'd)

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.) (concl.)

<u>Year</u>	<u>Remarks</u>
1965	A decline in numbers of this leafminer was evident over the previous year, when only a trace level of damage could be found at one point.
1966	Populations remained at a trace level; however, low numbers of mined leaves were observed at several locations.
1967-1968	Low numbers were observed at numerous locations.
1969-1971	not reported
1972	Populations were evident at several locations in the district.
1973	A marked increase in populations occurred; moderate-to-heavy leaf mining was evident at several locations.
1974	Populations decreased to a low level.
1975	A significant increase in populations occurred. Moderate-to-severe leaf mining was observed in regeneration aspen stands at several locations.
1976-1977	High populations persisted at numerous locations.
1978-1979	Populations decreased to light-to-moderate intensity throughout the district.
1980	Leaf mining was confined to small open-grown aspens at widely separated locations.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	Low populations were observed at several locations.
1952	Moderate-to-severe defoliation occurred on small black spruce trees on islands in Lady Evelyn Lake. Low numbers of larvae were observed at numerous locations elsewhere.

(cont'd)

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) (cont'd)

<u>Year</u>	<u>Remarks</u>
1953	No appreciable change in populations of this sawfly could be determined. Moderate-to-severe defoliation of small open-grown spruce trees occurred on lakeshore islands at scattered locations.
1954-1955	Pockets of moderate-to-severe defoliation occurred on small open-grown spruce trees at numerous locations.
1956	A small pocket of heavy infestation was observed in Hudson Twp.
1957	Populations increased and caused moderate-to-severe defoliation of small open-grown spruce trees at several locations.
1958	Populations remained at much the same level as in 1957.
1959	A decline in population levels occurred except in the Latchford area, where moderate-to-severe defoliation was evident on scattered roadside spruce trees.
1960	Moderate-to-severe defoliation recurred on small roadside spruce trees in the Latchford area. Light-to-moderate defoliation was evident at numerous locations elsewhere in the district.
1961	Populations declined; however, light-to-moderate defoliation was evident at several locations on lakeshores and along roadsides.
1962	Populations declined to a low level; no defoliation could be found.
1963	not reported
1964	low numbers of larvae taken in beating samples at a few scattered locations
1965	not reported
1966	Populations increased and caused moderate-to-severe defoliation at scattered points in Law, Briggs, Askin and Joan twps.
1967	Populations remained at much the same level as in the previous year.
1968	not reported

(cont'd)

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) (concl.)

<u>Year</u>	<u>Remarks</u>
1969	Low numbers of moderately-to-severely defoliated spruce trees were observed at scattered locations.
1970-1971	Moderate-to-severe defoliation of spruce trees was evident in wind breaks and plantations in Dymond Twp.
1972	Moderate-to-severe defoliation recurred in Dymond Twp. Pockets of new heavy infestation in windbreaks and plantations were observed in Harris Twp.
1973	High populations persisted in Harris Twp. Small pockets of medium-to-heavy infestation were observed at a few points elsewhere.
1974-1976	not reported
1977	Low populations were observed at widely separated points.
1978	Medium-to-high populations were found in the New Lisheard area, causing severe damage to hedges, windbreaks and ornamentals in some instances.
1979	Little change in population levels could be determined.
1980	Medium-to-high populations recurred and caused severe defoliation at several points in the northern part of the district.

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): pine, spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954-1957	Serious damage caused by the insect was evident in immature stands of white pine at numerous locations in the district.
1958	Damage by this weevil was widely distributed in immature stands of white pine throughout the district. Open-grown jack pine, white spruce and Scots pine were heavily damaged at numerous locations.

(cont'd)

White Pine Weevil, *Pissodes strobi* (Peck) (concl.)

<u>Year</u>	<u>Remarks</u>
1959-1961	Populations of the weevil continued to cause serious damage at numerous locations. Small roadside black spruce trees were heavily damaged in some areas.
1962-1967	Extensive damage caused by the insect was evident in white pine reproduction areas and plantations. Varying degrees of damage also occurred in small-diameter jack pine, white and black spruce stands at many locations.
1968	The insect continued to cause considerable damage in white pine reproduction areas and plantations and in small-diameter jack pine and white spruce stands.
1969	Little change in population levels could be determined over the previous year. High populations persisted at many locations, particularly in white pine reproduction areas.
1970-1972	A high incidence of damage persisted at numerous locations.
1973	The weevil continued to cause extensive damage to white pine and jack pine reproduction. The incidence of damage reached 19% in a small-diameter jack pine stand in First-brook Twp.
1974-1975	The incidence of weevil damage in young pine stands increased generally.
1976	Populations of the insect continued at a high level.
1977	High populations persisted. Examination of jack pine trees at quantitative sample points established in First-brook and Hartle twps revealed an incidence of 11% and 14% leader damage, respectively.
1978-1980	Serious damage caused by the weevil was evident in numerous stands.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): larch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	A pocket of heavy infestation was found near the northern boundary of the district. Surveys also revealed small areas of moderate-to-severe damage at four widely separated locations elsewhere (see map, page 97).
1955	A marked increase in distribution and intensity of infestations was recorded when pockets of damage were observed at many points throughout the district (see map, page 98). Defoliation reached 75% in many of the infested stands.
1956	Populations continued to increase and caused moderate-to-severe defoliation in many larch stands in the district (see map, page 99).
1957	High populations persisted and caused moderate-to-severe defoliation in many larch stands at scattered locations in the district (see map, page 100).
1958	Although the intensity of damage caused by the larch sawfly declined in some stands, moderate-to-severe defoliation did recur at scattered locations in the district (see map, page 101).
1959	Population levels declined markedly; only five pockets of medium-to-heavy infestation and five pockets of light damage were left at scattered locations in the district (see map, page 102).
1960	Populations of the sawfly continued to decline. Surveys revealed only one pocket of medium-to-heavy and three pockets of light-to-medium infestation in the district (see map, page 103).
1961	Populations continued to decline; only small pockets of light-to-moderate defoliation were left at nine scattered locations (see map, page 104).
1962-1973	Only low numbers of sawfly larval colonies could be found.
1974	Populations increased and caused light defoliation at numerous locations.

(cont'd)

Larch Sawfly, *Pristiphora erichsonii* (Htg.) (concl.)

<u>Year</u>	<u>Remarks</u>
1975	Populations continued to increase. Light-to-moderate defoliation was present in most stands in the district.
1976	Populations decreased and only low numbers of colonies could be found.
1977	Low numbers of colonies were observed at widely separated points but no significant defoliation occurred.
1978-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation
occurred in 1954

LEGEND

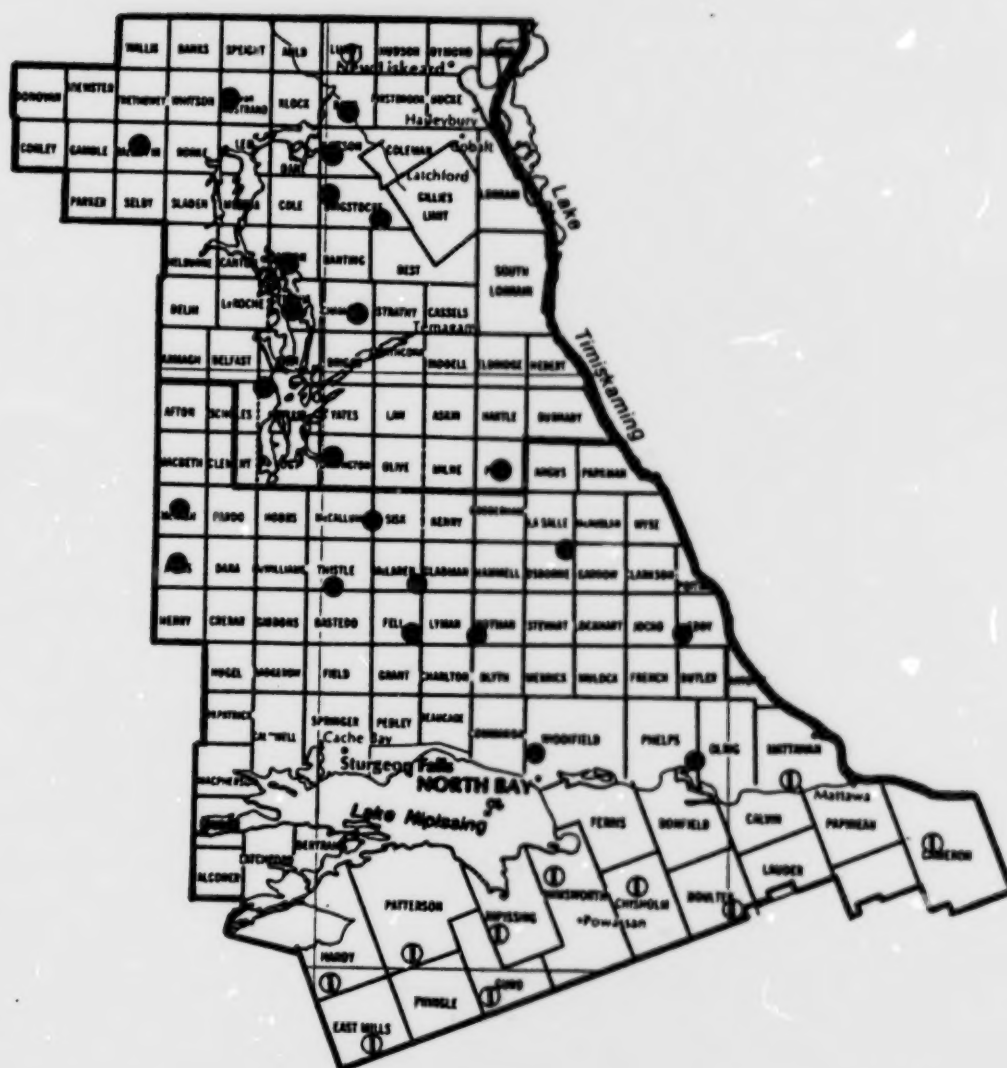
Light defoliation ⊙

Moderate-to-severe defoliation ●

Scale

Kilometres 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation
occurred in 1955

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation
occurred in 1956

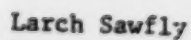
LEGEND

Light defoliation ⊙

Moderate-to-severe defoliation ●

Scale

Kilometres 0 10 20



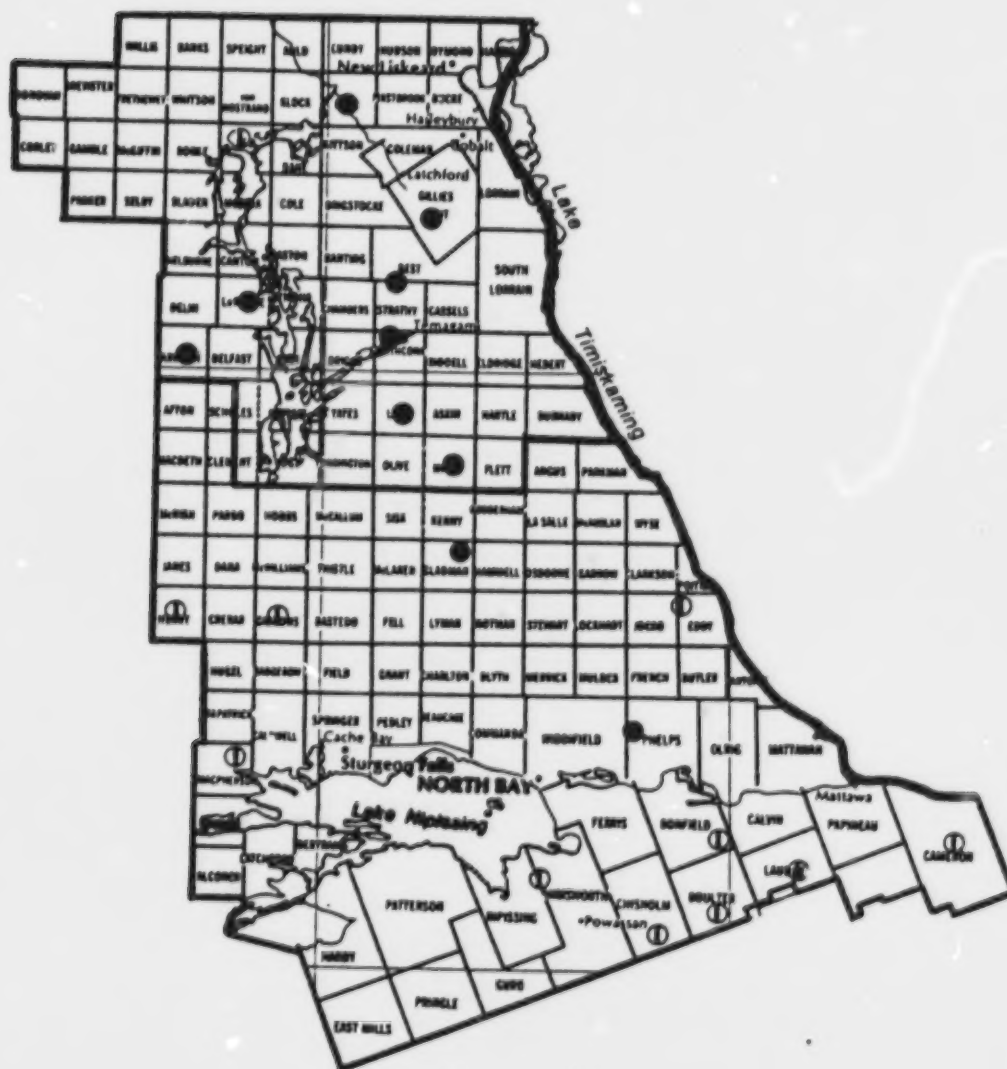
Scale



Light defoliation ①

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation
occurred in 1958

LEGEND

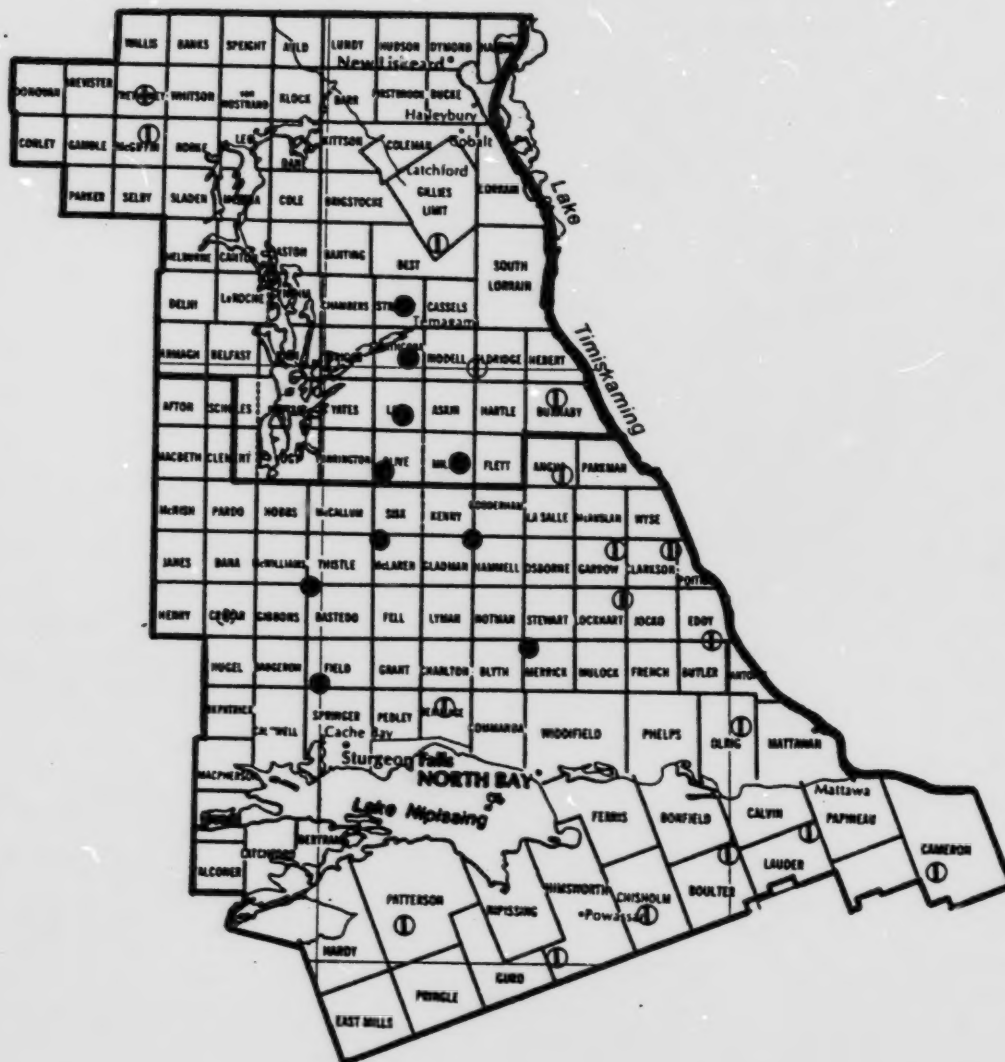
Light defoliation ⊙

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation
occurred in 1959

LEGEND

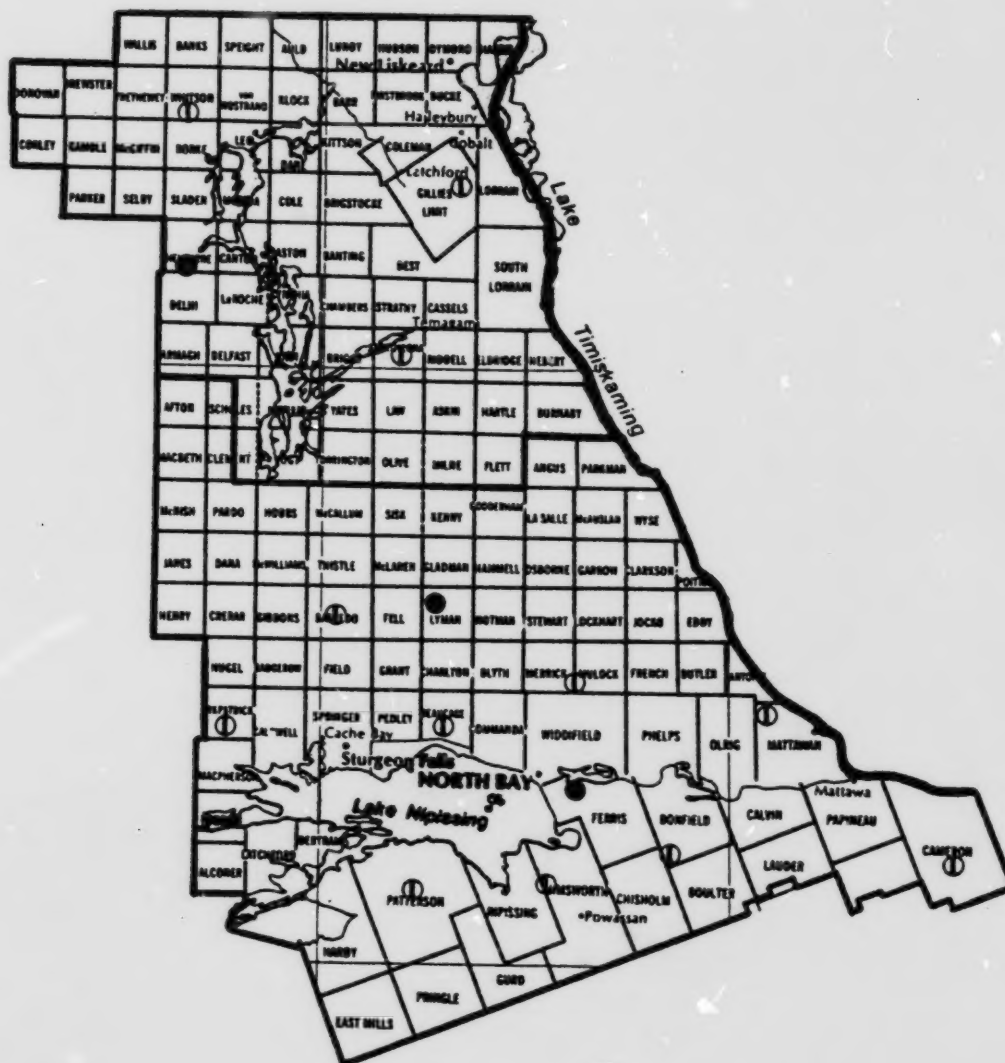
Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1960

LEGEND

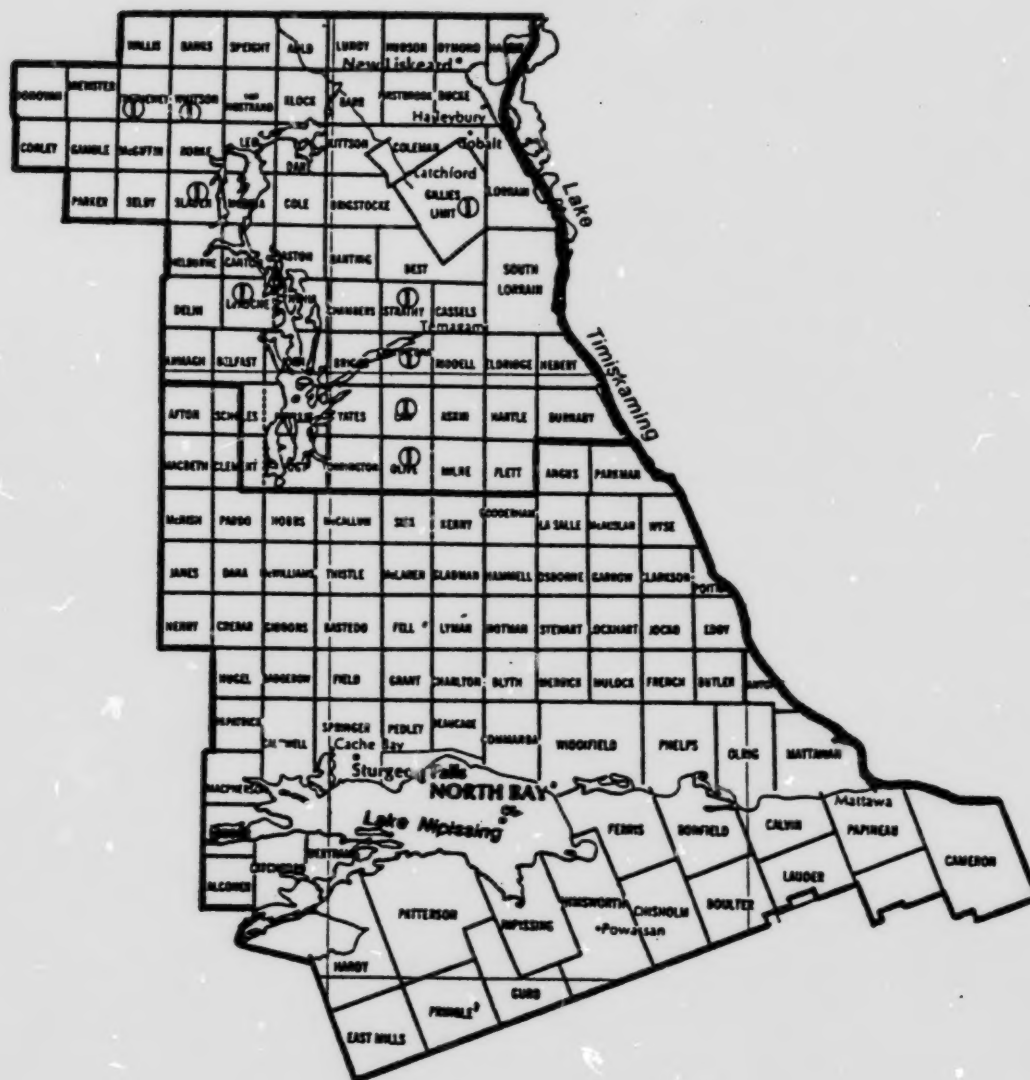
Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 10 20

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation
occurred in 1961

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation ①

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)

Host(s): mountain-ash

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1955	not reported
1956-1958	Pockets of moderate-to-heavy infestations were commonly observed in the southern part of the district. Defoliation ranged up to 45%.
1959	Moderate-to-severe defoliation of mountain-ash trees was evident at numerous locations.
1960-1963	Light-to-moderate defoliation of single and roadside trees was observed at many locations.
1964	Populations declined generally; however, moderate-to-severe defoliation did occur on some ornamentals in urban areas.
1965	Populations increased and caused moderate-to-severe defoliation at numerous locations.
1966-1967	Little change in population levels could be determined. Defoliation was observed at numerous locations.
1968	Populations increased and caused moderate-to-severe defoliation of mountain-ash trees at numerous points.
1969	Little change in population levels occurred. Pockets of moderate-to-severe defoliation were observed at numerous points.
1970	High populations persisted and caused moderate-to-severe defoliation of mountain-ash trees at numerous locations.
1971-1972	commonly observed throughout the district
1973	Moderately-to-severely defoliated trees were observed at numerous locations, especially in urban areas.
1974	Populations decreased. Only light defoliation could be found at a small number of locations.
1975	Populations increased and caused moderate-to-severe defoliation at many locations in the district.

(cont'd)

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) (concl.)

<u>Year</u>	<u>Remarks</u>
1976	A marked decline in population levels was evident. Only light defoliation could be found.
1977	Populations increased and caused moderate-to-severe defoliation at numerous locations.
1978-1980	High populations persisted throughout the district.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1955	not reported
1956	Low populations of this leafminer were observed at scattered points in the district.
1957	A marked increase in populations occurred. Although damage was generally light, the foliage on immature trees was severely mined at a few locations.
1958	No appreciable change in population levels of the insect could be determined.
1959	Populations increased and caused considerable leaf damage on birch trees at numerous locations.
1960-1961	Populations remained at much the same level as in 1959.
1962	Populations decreased to a low level; however, light damage was evident at many locations.
1963	Populations decreased to a tract level.
1964	Small groups of white birch trees were lightly infested on islands in Lake Temagami.
1965	Pockets of light-to-medium infestations were observed in Gillies Limit, Joan and Strathy twps.

(cont'd)

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow) (concl.)

<u>Year</u>	<u>Remarks</u>
1966	Light damage recurred in Gillies Limit, Strathy and Banks twps.
1967-1968	Light-to-moderate infestations were observed in many white birch stands.
1969-1970	not reported
1971-1972	Light-to-moderate damage was evident at scattered points.
1973	Populations declined to endemic levels.
1974-1976	not reported
1977	Low numbers were observed in many stands throughout the district.
1978-1980	not reported

Aspen Leafroller, *Pseudexentera oregonana* Wlsh.

Host(s): poplar

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1963	not reported
1964	Pockets of moderate-to-severe defoliation were observed in Gillies Limit, Lorrain and South Lorrain twps. Light-to-moderate damage was evident at numerous locations elsewhere.
1965-1966	Isolated pockets of moderate-to-severe damage persisted at widely separated locations.
1967	A general decline in population levels occurred. Generally defoliation was light and confined to the upper part of affected trees.
1968-1974	not reported
1975	Light-to-medium infestations occurred in the central part of the district.

(cont'd)

Aspen Leafroller, *Pseudexentera oregonana* Wlshm. (concl.)

<u>Year</u>	<u>Remarks</u>
1976	not reported
1977	A pocket of medium-to-heavy infestation was observed in Strathcona Twp. Light-to-moderate defoliation was observed in numerous stands in the northern part of the district.
1978	not reported
1979	Light-to-moderate defoliation was evident at a small number of locations in the Temagami area.
1980	Populations declined to an endemic level.

Other Noteworthy Insects

Eastern Blackheaded Budworm, *Acleris variaria* (Fern.)

Host(s): spruce, bF

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Trace populations occurred.
1955-1956	not reported
1957-1962	only trace populations reported
1963-1965	not reported
1966-1967	trace populations in Coleman and Bucke twps
1968-1980	not reported

(cont'd)

Pine Spittlebug, *Aphrophora cribrata* (Walker)

Host(s): conifers

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	high populations at numerous points
1960-1961	low populations
1962	not reported
1963-1964	rarely observed
1965-1966	not reported
1967-1968	low numbers at several points
1969-1971	not reported
1972	High numbers occurred in several stands.
1973-1977	low numbers, no damage evident
1978-1980	not reported

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1963	not reported
1964	found in small numbers in Gillies Limit Twp
1965	not reported
1966	low numbers at scattered points in the southern part of the district
1967-1968	not reported

(cont'd)

Jack Pine Budworm, *Choristoneura pinus pinus* Free. (concl.)

<u>Year</u>	<u>Remarks</u>
1969	low numbers at widely separated points
1970-1980	not reported

Jack Pine Tip Beetle, *Conophthorus banksianae* McPherson

(Host)s: jP

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1979	not reported
1980	high numbers in jack pine plantations at several locations

Aspen Twoleaf Tier, *Enargia decolor* (Wlk.)

Host(s): poplar

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960-1961	lightly defoliated trees at several points
1962	Small pockets of medium-to-heavy infestation occurred in the southern part of the district.
1963	pockets of moderate-to-severe defoliation in Gillies Limit and South Lorrain twps
1964-1968	not reported
1969	light-to-medium infestations in Gillies Limit, Bucke, Barr, Firstbrook, Coleman and Lorrain twps
1970	medium-to-heavy infestations through aspen stands in the northeastern part of the district

(cont'd)

Aspen Twoleaf Tier, *Enargia decolor* (Wlk.) (concl.)

<u>Year</u>	<u>Remarks</u>
1971-1972	not reported
1973	populations at very low level
1974-1978	not reported
1979	light-to-medium infestations evident at many points
1980	not reported

Aspen Leafroller, *Epinotia criddleana* Kft.

Host(s): poplar

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1962	not reported
1963-1964	Pockets of medium-to-heavy infestation occurred in Gillies Limit, Lorrain and South Lorrain twps.
1965-1980	not reported

Birch-aspen Leafroller, *Epinotia solandriana* Linn.

Host(s): birch, poplar

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1956	not reported
1957	light-to-moderate defoliation at numerous points
1958	not reported
1959-1962	low numbers at scattered locations

(cont'd)

Birch-aspen Leafroller, *Epinotia solandriana* Linn. (concl.)

<u>Year</u>	<u>Remarks</u>
1963	pockets of medium-to-heavy infestation at several points
1964-1965	not reported
1966	small groups of trees moderately-to-heavily infested in South Lorrain Twp
1967	not reported
1968-1972	pockets of light-to-moderate infestation at many locations
1973	not reported
1974	light damage evident in Banting, Best, Law and Strathy twps
1975-1980	not reported

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Host(s): pine

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1978	not reported
1979	populations evident in many jack pine plantations
1980	Appreciable numbers of shoots and leaders were damaged at several locations in the district.

Pine Needleminer, *Exoteleia pinifoliella* (Cham.)

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported

(cont'd)

Pine Needleminer, *Exoteleia pinifoliella* (Cham.) (concl.)

<u>Year</u>	<u>Remarks</u>
1959-1961	low numbers in numerous jack pine stands
1962	not reported
1963-1964	trace populations at several locations
1965-1980	not reported

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.)

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1950	low populations widely distributed
1951	low populations throughout the district
1952	low populations widely distributed
1953	low numbers widely distributed
1954	low populations at numerous locations
1955	Populations were at a low level.
1956-1957	Populations were at a low level.
1958	Low populations were present in most white spruce stands.
1959-1963	Low populations found in sampling white spruce stands
1964	not reported
1965	low numbers in Joan and Olive twps
1966	not reported
1967-1968	low numbers at sampling points

(cont'd)

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.) (concl.)

<u>Year</u>	<u>Remarks</u>
1969	not reported
1970	low numbers at widely separated points
1971-1972	not reported
1973	low numbers in beating samples
1974-1980	not reported

American Aspen Beetle, *Gonioctena americana* (Schaefer.)

Host(s): poplar

[Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951	high numbers observed at numerous points
1952	Populations declined to low levels.
1953	light-to-medium infestations at scattered points
1954-1956	not reported
1957	Low numbers occurred at several points.
1958	not reported
1959-1961	small patches of light-to moderate defoliation observed
1962	pockets of medium-to-heavy infestation in Aston and Strathy twps
1963	small, medium-to-heavy infestations in Barr and Firstbrook twps; light elsewhere
1964	light-to-medium infestations common in district
1965-1969	pockets of light-to-moderate defoliation in Firstbrook, Barr, Gillies Limit, Coleman and Lorrain twps

(cont'd)

American Aspen Beetle, *Gonioctena americana* (Schaefer.) (concl.)

<u>Year</u>	<u>Remarks</u>
1970-1973	pockets of light-to-moderate defoliation in the northern part of the district
1974	high populations in Bucke, Firstbrook, Coleman and Hudson twps
1975-1976	High populations caused pockets of light-to-moderate defoliation in the northern part of the district
1977-1980	pockets of moderate-to-severe defoliation through the northern part of the district

Fall Webworm, *Hyphantria cunea* (Dru.)

Host(s): deciduous species

[Major]

<u>Year</u>	<u>Remarks</u>
1950	medium-to-heavy infestations at scattered points
1951	Populations declined to a low level.
1952-1953	not reported
1954	light-to-medium infestations at scattered points
1955	Larval colonies were observed commonly in the district.
1956	Larval colonies were observed commonly.
1957	Light-to-medium infestations were observed at numerous points
1958	Populations were low but widely distributed.
1959	Populations were at trace levels.
1960	not reported
1961	Low populations occurred at scattered points.

(cont'd)

Fall Webworm, *Hyphantria cunea* (Dru.) (concl.)

Host(s): deciduous species

[Major]

<u>Year</u>	<u>Remarks</u>
1962	low numbers observed at numerous locations in the district
1963-1969	not reported
1970	common at numerous locations in the district
1971	Populations increased markedly in the district.
1972	Populations were at trace levels.
1973	not reported
1974	Scattered colonies of insects occurred on a variety of hosts.
1975	not reported
1976	individual colonies observed at numerous points
1977-1978	not reported
1979	medium-to-high numbers throughout the district
1980	Populations were at a low level.

Hemlock looper, *Lambdina fiscellaria fiscellaria* (Gn.)

Host(s): spruce, bF, He

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1954	not reported
1955	light-to-medium infestations in Chambers and Aston twps
1956-1957	small numbers collected
1958-1980	not reported

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar

Host(s): cherry [Major]

<u>Year</u>	<u>Remarks</u>
1950-1962	not reported
1963	small numbers in Joan Twp
1964	not reported
1965-1968	larval tents common in the northern part of the district particularly in Barr, Bucke and Firstbrook twps
1969-1980	not reported

Cedar Sawfly, *Monoctenus juniperinus* MacG.

Host(s): cedar, juniper [Minor]

<u>Year</u>	<u>Remarks</u>
1950-1954	low populations in most cedar stands
1955	light-to-medium infestations at scattered points
1956-1961	low populations in most stands examined
1962	not reported
1963	trace populations through district
1964-1980	not reported

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck.)

Host(s): jP [Minor]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported

(cont'd)

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck.) (concl.)

<u>Year</u>	<u>Remarks</u>
1954	light damage in South Lorrain Twp
1955	not reported
1956-1958	low numbers common in most stands examined
1959-1962	not reported
1963-1967	low numbers through district
1968-1980	not reported

Pine Tortoise Scale, *Toumeyella parvicornis* (Cock.)

Host(s): jP, scP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962-1963	Small, medium-to-heavy infestations occurred in Askin and Gillies Limit twps.
1964	small numbers of moderately-to-heavily infested trees in Askin, Barr, Bucke and Coleman twps
1965-1967	small groups of young trees moderately-to-heavily infested in Firstbrook and Joan twps
1968-1974	small groups of trees moderately-to-heavily infested at several points through the district
1975-1980	not reported

DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl: Fr.) Kummer

Host(s): coniferous, deciduous species

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1962	not reported
1963	Several recently dead balsam fir trees were infected by this pathogen in Coleman Twp.
1964-1975	not reported
1976-1980	widely distributed at a low level in young pine stands and plantations throughout the district

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau

Host(s): elm

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1970	not reported
1971	The first record of this pathogen in the district was obtained when a culture from an elm tree in Lorrain Twp proved positive for Dutch elm disease.
1972	Infected elm trees were observed in the Cobalt, Haileybury and New Liskeard areas.
1973-1980	Mortality caused by this pathogen was evident wherever the host trees were present.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary and
C. ledicola (Peck) Lagerh.

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported

(cont'd)

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary and
C. ledicola (Peck) Lagerh. (cont'd)

<u>Year</u>	<u>Remarks</u>
1954	A trace level of infection was observed on black spruce trees at one location.
1955-1956	not reported
1957	Foliage of small trees and the lower crown of larger black spruce trees were moderately-to-heavily infected in swampy areas at numerous locations in the district.
1958	not reported
1959	Low levels of infection were observed at widely separated locations.
1960	Light-to-moderate damage was observed at three widely separated locations.
1961-1963	not reported
1964	Low levels of infection were observed at several points.
1965	Varying degrees of infection occurred in many stands throughout the district.
1966	Little change in the level of infection or distribution could be determined over the previous year.
1967	Light-to-moderate damage was evident in host stands throughout the district.
1968	A decrease in the level of infection and distribution of this pathogen was evident when only traces of damage could be found.
1969	The incidence of infection remained at a trace level at widely separated points.
1970-1972	not reported
1973	Light-to-moderate infection levels were recorded in stands in Firstbrook Twp. Elsewhere, although the incidence of infection was medium-to-high at numerous locations, only trace levels of damage could be found.
1974-1977	not reported.

(cont'd)

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary and
C. ledicola (Peck) Lagerh. (concl.)

<u>Year</u>	<u>Remarks</u>
1978-1980	Trace levels of infection were observed at widely separated points.

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1957	not reported
1958	Pockets of medium-to-heavy infection caused premature browning and leaf drop of host species in Firstbrook, Law, Askin, Strathy, Best and Cassels twps.
1959-1963	not reported
1964	Light-to-medium damage was observed at widely separated points in the district.
1965	Pockets of medium-to-high levels of infection occurred at scattered points in the southern part of the district.
1966	not reported
1967	Pockets of moderate-to-severe damage occurred in regeneration or sapling-sized aspens at scattered locations.
1968	Although this disease was widely distributed through the district, only trace levels of infection could be found.
1969	Low numbers of trees on fringes or within stands were moderately-to-heavily infected at scattered points.
1970	Extensive foliar damage caused by this pathogen was observed at widely separated locations.
1971	Although the disease was widely distributed, infection levels were generally low where found in the district.

(cont'd)

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver (concl.)

<u>Year</u>	<u>Remarks</u>
1970	Extensive foliar damage caused by this pathogen was observed at widely separated locations.
1971	Although the disease was widely distributed, infection levels were generally low where found in the district.
1972-1973	Surveys revealed only trace levels of infection at a few widely separated points.
1974-1977	not reported
1978	The disease was observed at several locations; however, although the incidence of infected trees in these locations was generally medium to high, only low levels of damage could be found.
1979	Trace damage levels were frequently observed; however, the incidence of infection varied considerably.
1980	Small pockets of light-to-medium defoliation were observed in Askin and Riddell twps. No evidence of the disease was observed elsewhere.

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides* Arthur
 Sweet Fern Blister Rust, *C. comptoniae* Arth.
 White Pine Blister Rust, *C. ribicola* J.C. Fischer ex Rabenh.
 Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats.

[Major]

<u>Year</u>		<u>Host(s)</u>	<u>Remarks</u>
1950-1953			not reported
1954	<i>C. ribicola</i>	WP	light damage observed at three points
1955	<i>C. ribicola</i>	WP	infected trees found more frequently than in the previous year

(cont'd)

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides*

Arthur

Sweet Fern Blister Rust, *C. comptoniae* Arth.White Pine Blister Rust, *C. ribicola* J.C. Fischer ex Rabenh.Western Gall Rust, *Endocronartium harknessii* (J.P. Moore)
Y. Hirats. (cont'd)

<u>Year</u>		<u>Host(s)</u>	<u>Remarks</u>
1956-1957			not reported
1958	<i>C. ribicola</i>	WP	Medium-to-heavy damage occurred in roadside regeneration in Gillies Limit Twp.
1959			not reported
1960	<i>C. ribicola</i>	WP	Infected trees were observed at many points in the district.
1961-1962			not reported
1963	<i>C. ribicola</i>	WP	Diseased trees were observed at numerous points and light tree mortality was evident in Gillies Limit and Strathy twps.
	<i>E. harknessii</i>	JP	globose gall infection common in jack pine stands in Strathy and Firstbrook twps
1964	<i>C. ribicola</i>	WP	Branch and stem mortality caused by this rust occurred in varying degrees of intensity in most white pine stands in the district.
1965	<i>C. ribicola</i>	WP	Damage caused by this disease continued in many stands. A quantitative sample in Strathy Twp revealed an incidence of 22% infection and 9% mortality in the area.
	<i>C. comptoniae</i>	JP	Surveys revealed the presence of this stem rust in many stands throughout the district. A quantitative sample in Bucke Twp revealed an incidence of 3% infection in the area.

(cont'd)

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides*
Arthur

Sweet Fern Blister Rust, *C. comptoniae* Arth.

White Pine Blister Rust, *C. ribicola* J.C. Fischer ex
Rabenh.

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore)
Y. Hirats. (cont'd)

<u>Year</u>		<u>Host(s)</u>	<u>Remarks</u>
1966	<i>C. ribicola</i>	wP	This rust continued to cause severe damage and varying degrees of mortality in stands throughout the district.
	<i>C. comptoniae</i>	jP	Infected trees were observed at many locations. The incidence of infection ranged to 4%.
1967			not reported
1968	<i>C. comptoniae</i>	jP	Continuing surveys for this disease revealed an incidence of 47% and 27% infection in jack pine stands in Gillies Limit and Coleman twps, respectively
	<i>C. ribicola</i>	wP	Serious damage and varying degrees of mortality continued to occur in many stands in the district.
1969	<i>C. comptoniae</i>	jP	No significant trends in the incidence of infection could be determined over the previous year.
	<i>C. ribicola</i>	wP	This pathogen continued to cause serious damage and appreciable mortality in many stands in the district.
	<i>E. harknessii</i>	jP	Low numbers of globose galls were observed in many stands throughout the district.
1970	<i>C. comptoniae</i>	jP	Surveys for this pathogen revealed a medium-to-high incidence of infection in several jack pine stands; however, no current mortality could be found.

(cont'd)

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides*
Arthur

Sweet Fern Blister Rust, *C. comptoniae* Arth.

White Pine Blister Rust, *C. ribicola* J.C. Fischer ex
Rabenh.

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore)
Y. Hirats. (cont'd)

<u>Year</u>		<u>Host(s)</u>	<u>Remarks</u>
1970	<i>E. harknessii</i>	jP	Little change from the previous year could be determined in the incidence of this disease.
1971	<i>C. comptoniae</i>	jP	This pathogen of jack pine was again evident in numerous stands throughout the district and traces of tree mortality occurred at scattered locations.
	<i>C. ribicola</i>	wP	This rust disease continued to cause serious damage and some tree mortality in many white pine stands in the district.
1972	<i>C. comptoniae</i>	jP	Little change from the previous year in the incidence of this pathogen or in current mortality could be determined.
	<i>C. ribicola</i>	wP	Currently dead tops and branches were conspicuous in many stands. Current tree mortality was observed in some areas.
	<i>E. harknessii</i>	jP	This gall-forming rust was evident on branches of large trees and on stems of small reproduction trees at numerous locations.
1973	<i>C. comptoniae</i>	jP	Examination of jack pine stands showed that the pathogen is common in many stands and as much as 5% current mortality has been recorded in some areas.
	<i>C. ribicola</i>	wP	This rust continued to cause extensive damage and varying degrees of mortality in regeneration and mature stands throughout the district.

(cont'd)

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides*

Arthur

Sweet Fern Blister Rust, *C. comptoniae* Arth.White Pine Blister Rust, *C. ribicola* J.C. Fischer ex Rabenh.Western Gall Rust, *Endocronartium harknessii* (J.P. Moore)
Y. Hirats. (cont'd)

<u>Year</u>		<u>Host(s)</u>	<u>Remarks</u>
1973	<i>E. harknessii</i>	jP	There was little change from the previous year in the incidence of this disease.
1974	<i>C. ribicola</i>	wP	Damage to branches and stems and mortality caused by this rust remained at much the same level as in 1973.
	<i>E. harknessii</i>	jP	A low incidence of this rust was evident in numerous stands in the district.
1975	<i>C. comptoniae</i>	jP	This pathogen continued to affect jack pine stands at many locations. A quantitative sample in Firstbrook Twp revealed 11% current tree mortality in the area.
	<i>C. ribicola</i>	wP	Although the disease was widespread through the district, damage levels were generally lower than in the past several years.
1976	<i>C. comptoniae</i>	jP	No important change in the status of this pathogen was observed.
	<i>C. ribicola</i>	wP	Light-to-moderate damage recurred in many stands in the district.
1977-1978	<i>C. ribicola</i>	wP	No appreciable change in the status of this disease was recorded.
1979	<i>E. harknessii</i>	jP	Surveys throughout the district indicate that the pathogens were at a low level and of little consequence in stands examined.
1980	<i>C. ribicola</i>	wP	Light-to-moderate damage was evident in all stands examined in the district.

(cont'd)

Rusts of Pine, Stalactiform Blister Rust, *Cronartium coleosporioides* Arthur

Sweet Fern Blister Rust, *C. comptoniae* Arth.

White Pine Blister Rust, *C. ribicola* J.C. Fischer ex Rabenh.

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats. (concl.)

<u>Year</u>	<u>Host(s)</u>	<u>Remarks</u>
1980	<i>E. harknessii</i> JP	Trace levels of infection were evident in regeneration at numerous locations.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	Surveys revealed varying incidences of this pathogen in poplar stands throughout the district. A quantitative sample made in a stand near Temagami revealed an incidence of 29% infection in the area.
1954-1961	not reported
1962	common in most aspen stands in the district
1963-1964	Varying degrees of mortality caused by this pathogen occurred in aspen stands throughout the district.
1965-1969	This pathogen persisted in aspen stands at numerous points throughout the district.
1970	not reported
1971-1972	This stem canker continued to cause varying degrees of mortality in aspen stands throughout the district.
1973	Surveys and quantitative sampling revealed that this pathogen is still causing varying degrees of damage in most aspen stands. In some instances current mortality reached 10%.
1974-1980	The pathogen was not reported; however, varying degrees of damage are recurring each year in many aspen stands throughout the district.

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & v. Arx

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962	Regeneration and pole-type stands were moderately-to-heavily infected by the pathogen in South Lorrain Twp.
1963	Low levels of infection were observed at numerous locations.
1964	Moderate-to-severe damage occurred on regeneration aspens at several points in the southern part of the district.
1965-1966	A low incidence of infection and light-to-moderate damage were evident at scattered locations throughout the district.
1967	This pathogen caused moderate-to-severe shoot blight in small-diameter aspens at several locations throughout the district.
1968	not reported
1969	Moderate-to-severe damage to aspen regeneration was evident in Barr and Firstbrook twps.
1970-1972	not reported
1973	A low incidence of infection and trace levels of damage were evident at a small number of locations in the district.
1974-1976	not reported
1977	Trace levels of damage occurred at a small number of widely separated locations.
1978	not reported
1979	The incidence of this disease varied; however, little foliar damage could be found.
1980	not reported

Other Noteworthy Diseases

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Peck

Host(s): spruce, jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1972	not reported
1973	Trace infections were evident in Gillies Limit, Strathcona and Olive twps.
1974	trace-to-light damage observed at numerous locations
1975-1980	not reported

Pine Needle Rust, *Coleosporium asterum* (Dietel) Sydow

Host(s): pine

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	light-to-moderate damage at widely separated locations
1960	medium-to-heavy infection on understory trees at one location
1961-1964	not reported
1965-1966	Light-to-moderate infection occurred in reforested areas in Firstbrook Twp; trace levels were found at many other locations.
1967-1973	not reported
1974	trace infections at scattered locations
1975-1980	not reported

Tar Spot Needle Cast, *Davisomycella ampla* (J. Davis) Darker

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960	moderate-to-severe foliage damage at several locations
1961-1962	not reported
1963	widely distributed through the district, with the incidence of infection exceeding 10% in many stands
1964	not reported
1965-1966	occasional small pockets of moderately-to-heavily infected trees observed
1967-1970	not reported
1971-1973	light-to-medium foliar damage at numerous locations
1974-1980	not reported

Anthracnose, *Discula* spp.

Host(s): deciduous species

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1963	not reported
1964	widespread through the district; appreciable twig mortality evident
1965	not reported
1966	light-to-moderate damage at numerous locations
1967-1980	not reported

Needle Cast, *Lophodermium pinastri* (Schrad. ex Hook.) Chev.

Host(s): pines

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1956	not reported
1957	Conspicuous damage occurred in mature white pine stands in the Lake Temagami area.
1958-1966	not reported
1967	foliar damage common at several locations
1968-1972	not reported
1973	medium-to-heavy needle damage evident at numerous locations
1974-1980	not reported

Larch-poplar Rust, *Melampsora medusae* Thüm.

(Host(s): poplars

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1973	not reported
1974	present in varying degrees of infection throughout the district
1975-1980	not reported

White Trunk Rot, *Phellinus igniarius* (L.: Fr.) Quélet

Host(s): deciduous species

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported

White Trunk Rot, *Phellinus igniarius* (L.: Fr.) Quélet (concl.)

<u>Year</u>	<u>Remarks</u>
1954	The fungus was observed commonly but mainly on mature poplars.
1955-1980	not reported

Red Ring Rot, *Phellinus pini* (Brot.: ex Fr.) A. Ames

Host(s): conifers [Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	This disease was found in white, red and jack pine stands and occasionally on white spruce and tamarack.
1955-1956	not reported
1957	Moderate-to-severe damage occurred in white pine stands.
1958-1980	not reported

Fireweed Rust, *Pucciniastrum epilobii* Otth.

Host(s): bF [Minor]

<u>Year</u>	<u>Remarks</u>
1950-1966	not reported
1967	light-to-medium foliage damage at a few locations
1968-1980	not reported

Tar Spot, *Rhytisma acerinum* (Pers.) Fr.

Host(s): maples

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962-1963	common throughout the district
1964-1980	not reported

Shoot Blight, *Venturia populina* (Vuill.) Fabric.

Host(s): bPo

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962	light-to-medium infection in Strathcona, Gillies Limit and Lorrain twps
1963	common on sucker growth throughout the district; infection ranged up to 25%
1964-1967	light-to-medium infection at numerous locations
1968-1980	not reported



ABIOTIC DAMAGE

Drought

<u>Year</u>	<u>Remarks</u>
1950-1974	not reported
1975	A physiological drought condition in late summer of 1974 damaged foliage and newly developed buds in red pine plantations in Firstbrook Twp. The damage to the buds resulted in the failure of many terminal shoots in the plantations in 1975.
1976	Extensive damage in the form of premature foliage browning and leaf drop caused by prolonged warm, dry weather during the latter part of August and September occurred in white birch stands throughout the district.
1977-1980	not reported

Frost

<u>Year</u>	<u>Remarks</u>
1950-1956	not reported
1957	A late spring frost caused moderate-to-severe damage to newly opened leaves in trembling aspen stands at numerous locations. Light foliar damage was evident on other tree species as well.
1958	Late spring frosts caused extensive damage to the new foliage of white spruce, black ash, balsam fir and balsam poplar at numerous locations.
1959-1963	not reported
1964	Late spring frosts caused extensive injury to conifers in low-lying areas. Varying degrees of damage to ash and poplar species were also observed at several locations.
1965	Severe frosts in late May and early June injured the new foliage on conifers in low-lying areas at numerous locations. Varying degrees of damage also occurred to deciduous hosts as well.

(cont'd)

Frost (concl.)

<u>Year</u>	<u>Remarks</u>
1966-1971	not reported
1972	Late spring frosts caused moderate-to-severe damage to the foliage of poplar, maple, spruce, balsam fir and in some cases to pines at numerous locations.
1973-1977	not reported
1978	Light-to-moderate damage to the current foliage of many tree species was evident as a result of freezing temperatures in early June at several locations in the district.
1979	not reported
1980	Aspen, red maple and spruce-fir stands suffered moderate-to-severe frost damage throughout the northern part of the district.

Snow

<u>Year</u>	<u>Remarks</u>
1950-1970	not reported
1971	Appreciable branch damage caused by snow and ice conditions during the winter of 1970-1971 was noted throughout the district.

Winter Drying

<u>Year</u>	<u>Remarks</u>
1950-1957	not reported
1958	Moderate-to-severe foliage browning occurred in exposed red pine, white pine, and Scots pine stands.
1959	not reported

(cont'd)

Winter Drying (concl.)

<u>Year</u>	<u>Remarks</u>
1960	Conspicuous damage occurred in open-grown regeneration white pine stands at several locations.
1961-1966	not reported
1967	Particularly severe discoloration of needles of white and red pine on exposed sites was evident in the Lady Evelyn, Obabika, Temagami and Anima Nipissing lakes area. Other conifer species were affected in varying degrees as well.
1968-1969	not reported
1970	Unusually moderate-to-severe winter drying occurred on windbreaks and plantations of coniferous species throughout the district.
1971	Discoloration of coniferous foliage was generally light-to-moderate and confined to exposed lakeshore stands and plantations.
1972	Plantations of white, red and jack pine and mature white pines along lakeshores were moderately-to-severely affected.
1973-1974	not reported
1975-1980	not reported

APPENDICES

APPENDIX A

DECIDUOUS HOST

<u>Common name</u>	<u>Scientific name</u>	<u>Abbreviations</u>
Alder	<i>Alnus</i> spp.	Al
Apple	<i>Malus</i> spp.	Ap
Ash, black	<i>Fraxinus nigra</i> Marsh.	As
Aspen, largetooth	<i>Populus grandidentata</i> Michx.	lA
trembling	<i>tremuloides</i> Michx.	tA
Basswood	<i>Tilia</i> spp.	Ba
Beech	<i>Fagus grandifolia</i> Ehrh.	Be
Birch, white	<i>Betula papyrifera</i> Marsh.	wB
yellow	<i>alleghaniensis</i> Britt.	yB
Butternut	<i>Juglans cinerea</i> L.	Bu
Cherry, eastern choke	<i>Prunus virginiana</i> L.	eaCh
pin	<i>pensylvanica</i> L.f.	pCh
Elm, white	<i>Ulmus americana</i> L.	wE
Horse-chestnut	<i>Aesculus hippocastanum</i> L.	hChe
Ironwood	<i>Ostrya</i> spp.	I
Maple, Manitoba	<i>Acer negundo</i> L.	mM
red	<i>rubrum</i> L.	rM
sugar	<i>saccharum</i> Marsh.	sM
Mountain-ash, American	<i>Sorbus americana</i> Marsh.	aMo
Oak, bur	<i>Quercus macrocarpa</i> Michx.	bO
red	<i>rubra</i> L.	rO
Poplar, balsam	<i>Populus balsamifera</i> L.	bPo
Carolina	<i>eugenei</i> Simon-Louis	cPo
Lombardy	<i>nigra</i> L.	lPo
silver	<i>alba</i> L.	sPo
Willow	<i>Salix</i> spp.	W

APPENDIX B

CONIFEROUS HOST

<u>Common Name</u>	<u>Scientific name</u>	<u>Abbreviations</u>
Cedar, eastern white	<i>Thuja occidentalis</i> L.	eC
Fir, balsam	<i>Abies balsamea</i> (L.) Mill.	bF
Larch	<i>Larix laricina</i> (Du Roi) K. Koch	tL
Pine, Austrian	<i>Pinus nigra</i> Arn.	aP
eastern white	<i>strobus</i> L.	wP
jack	<i>banksiana</i> Lamb.	jP
mugho	<i>mugho</i> Turra	mP
red	<i>resinosa</i> Ait.	rP
Scots	<i>sylvestris</i> L.	scP
Spruce, black	<i>Picea mariana</i> (Mill.) B.S.P.	bs
Colorado	<i>pungens</i> Engelm.	colS
Norway	<i>abies</i> (L.) Karst.	nS
red	<i>rubens</i> Sarg.	rS
white	<i>glauca</i> (Moench) Voss	wS

APPENDIX C

MAPS - NORTHEASTERN ONTARIO



NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1950

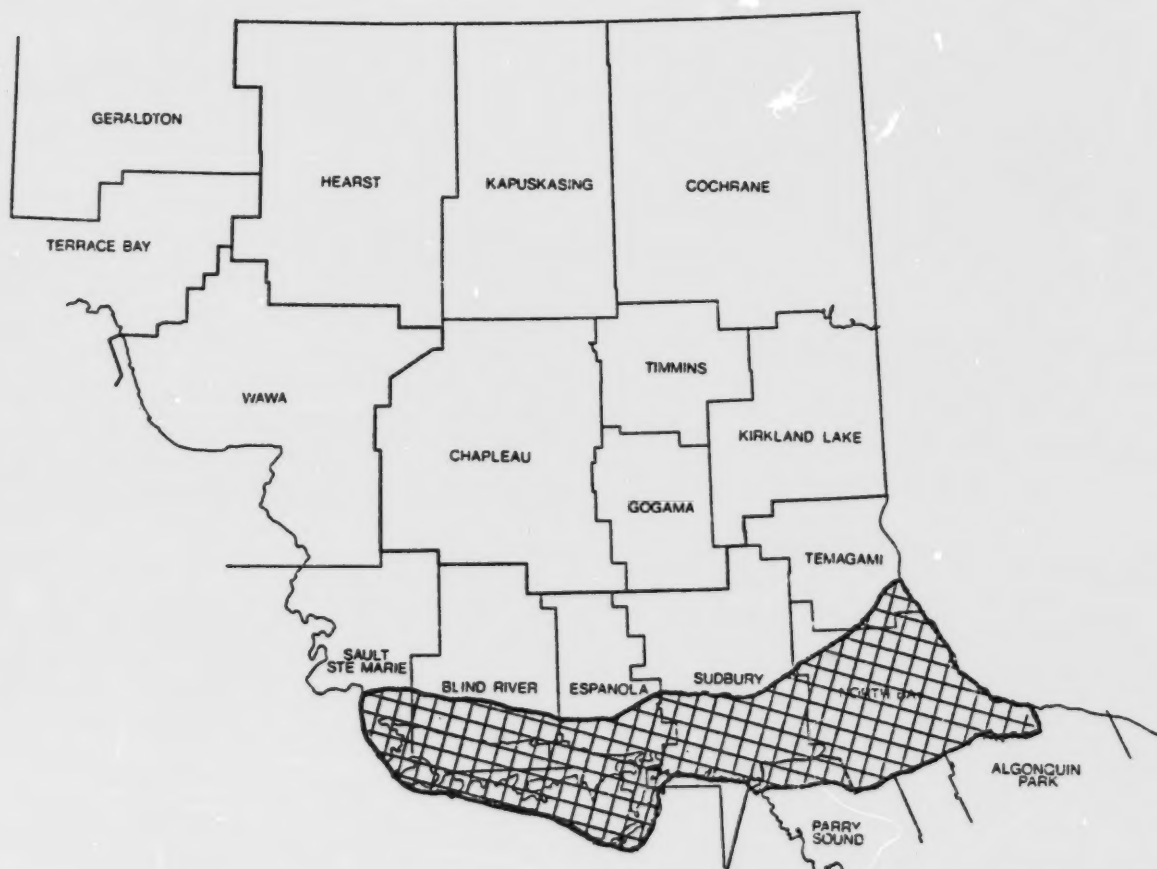
LEGEND

Light defoliation ①

Moderate-to-severe defoliation 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1961

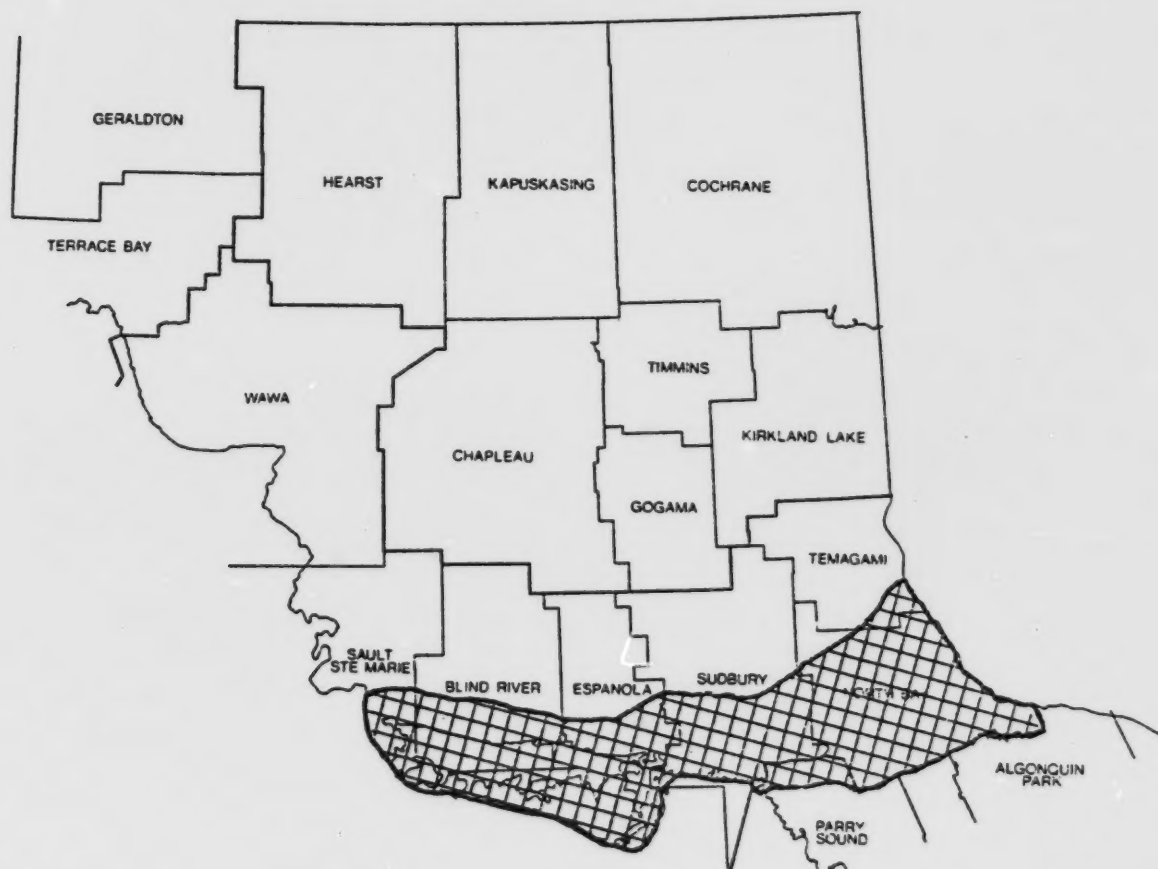
LEGEND

Moderate-to-severe defoliation



0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1961

LEGEND

Moderate-to-severe defoliation



0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1970

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1963

LEGEND

Light defoliation 

Moderate-to-severe defoliation • or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1972

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation 

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1971

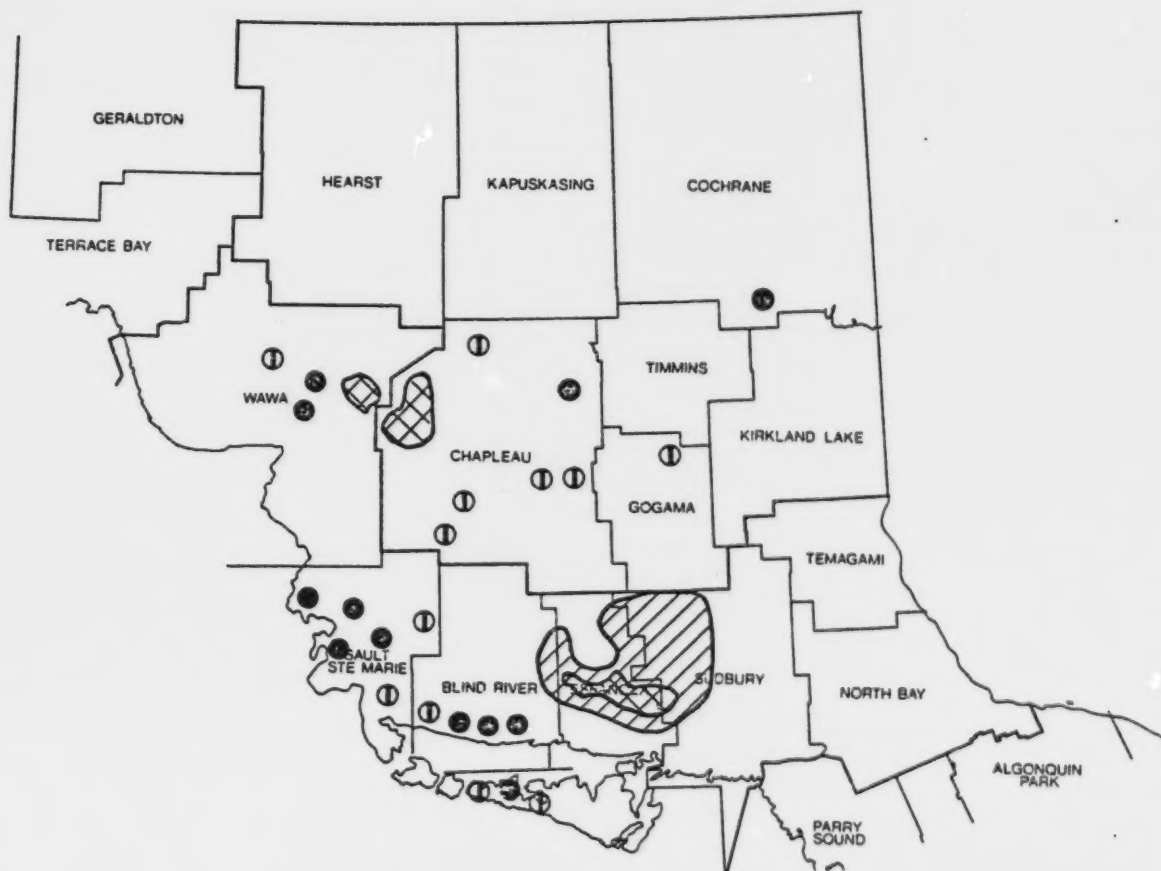
0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation



NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation
occurred in 1957

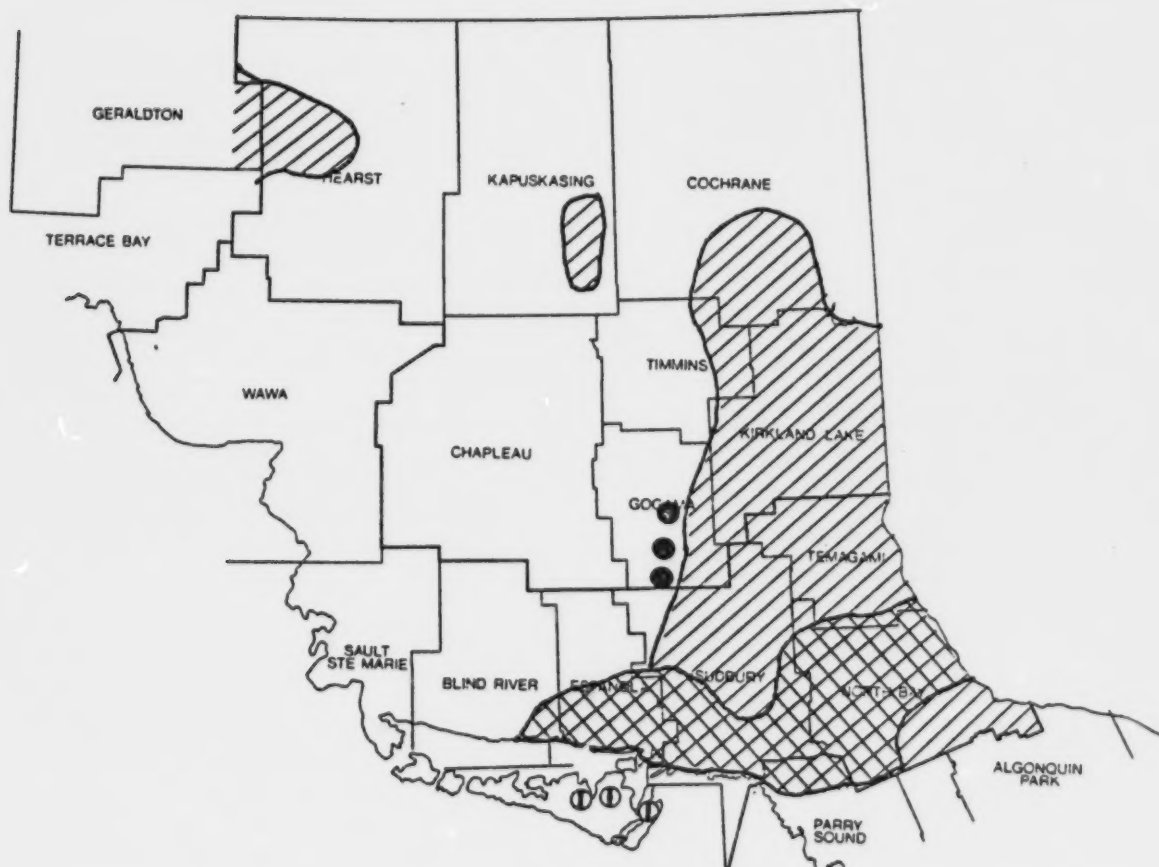
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ○ or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1973

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation
occurred in 1959

0 Miles 60

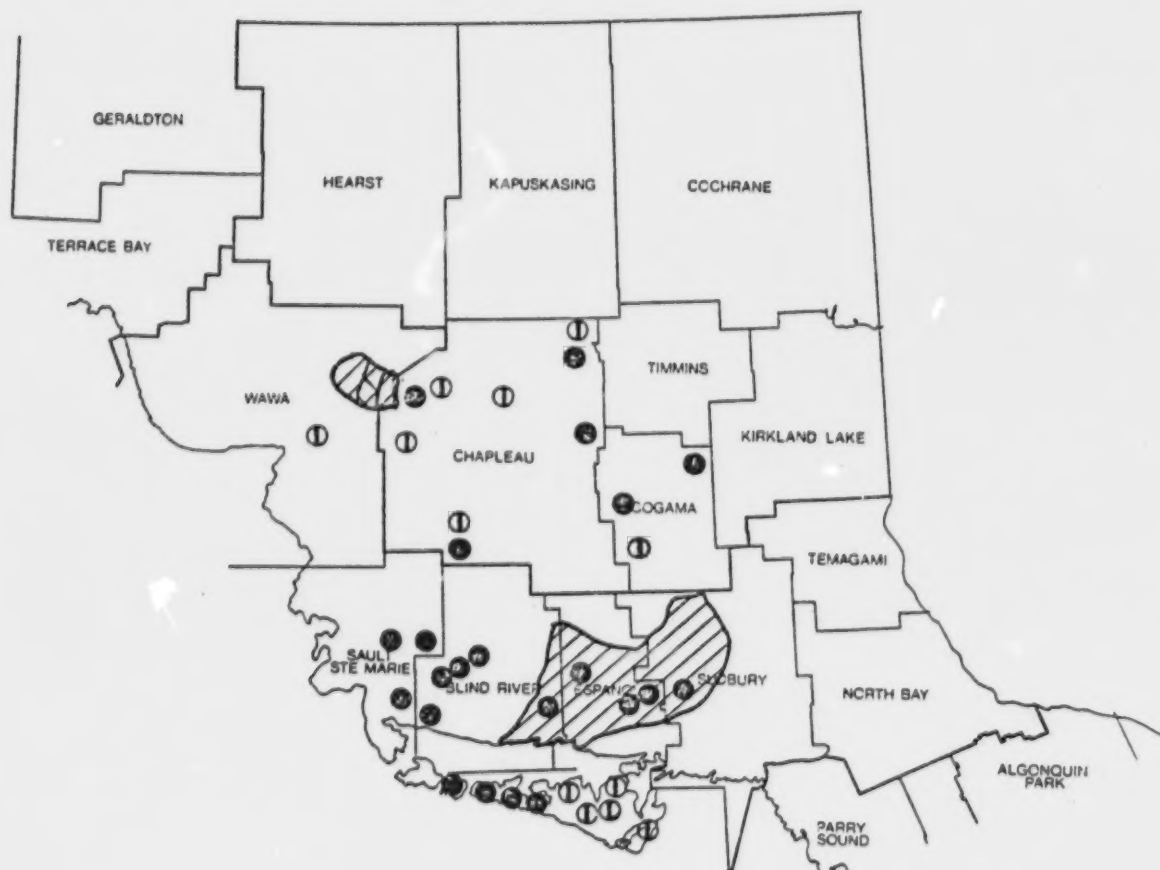
0 Kilometres 96

LEGEND

Light defoliation ① or 

Moderate -severe defoliation ② or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation
occurred in 1958

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

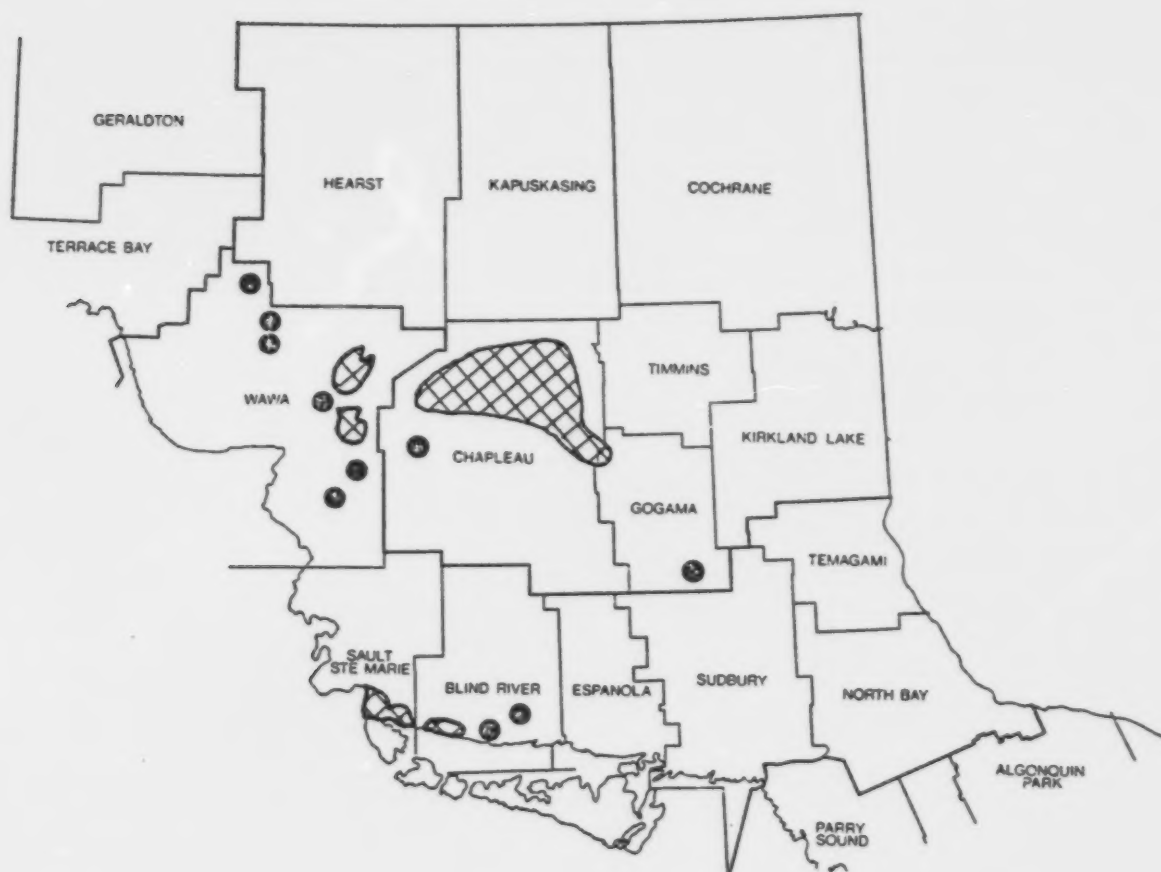
Areas within which defoliation
occurred in 1971

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

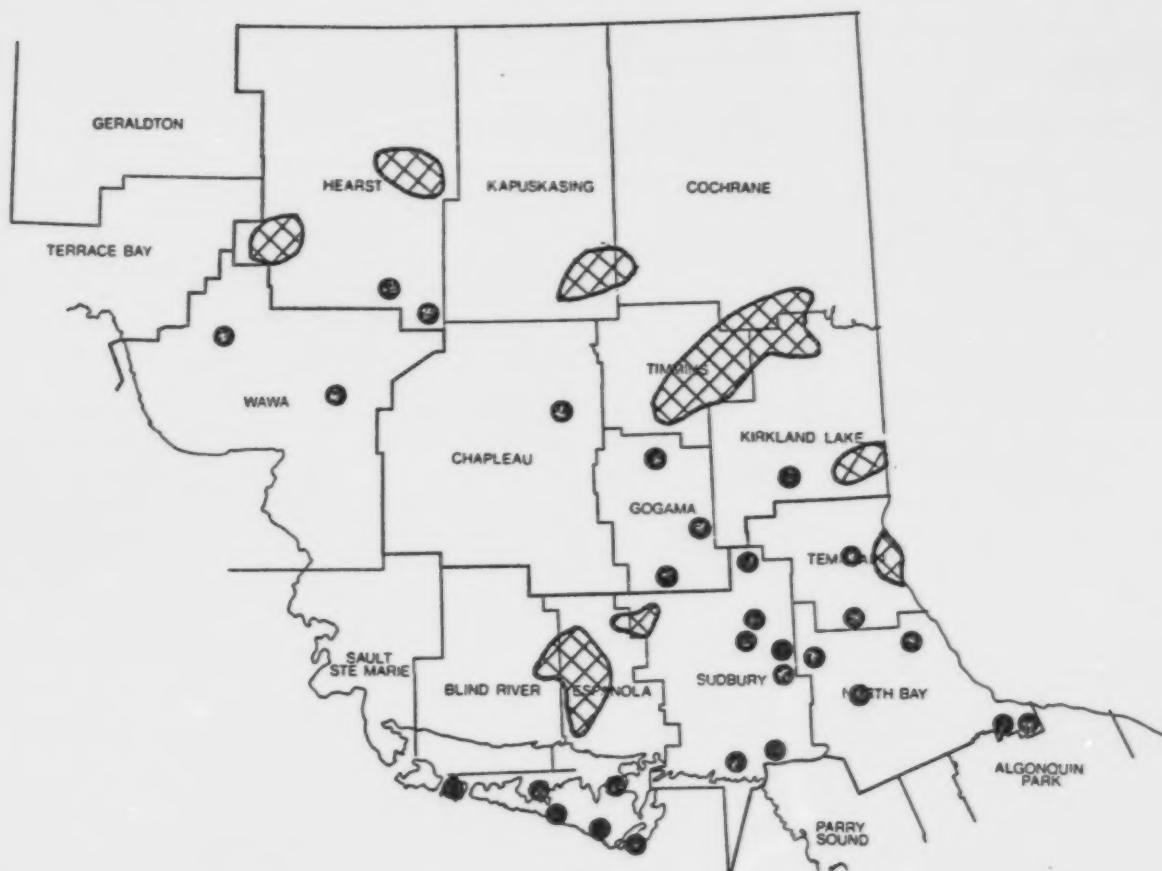
Areas within which defoliation
occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Large Aspen Tortrix

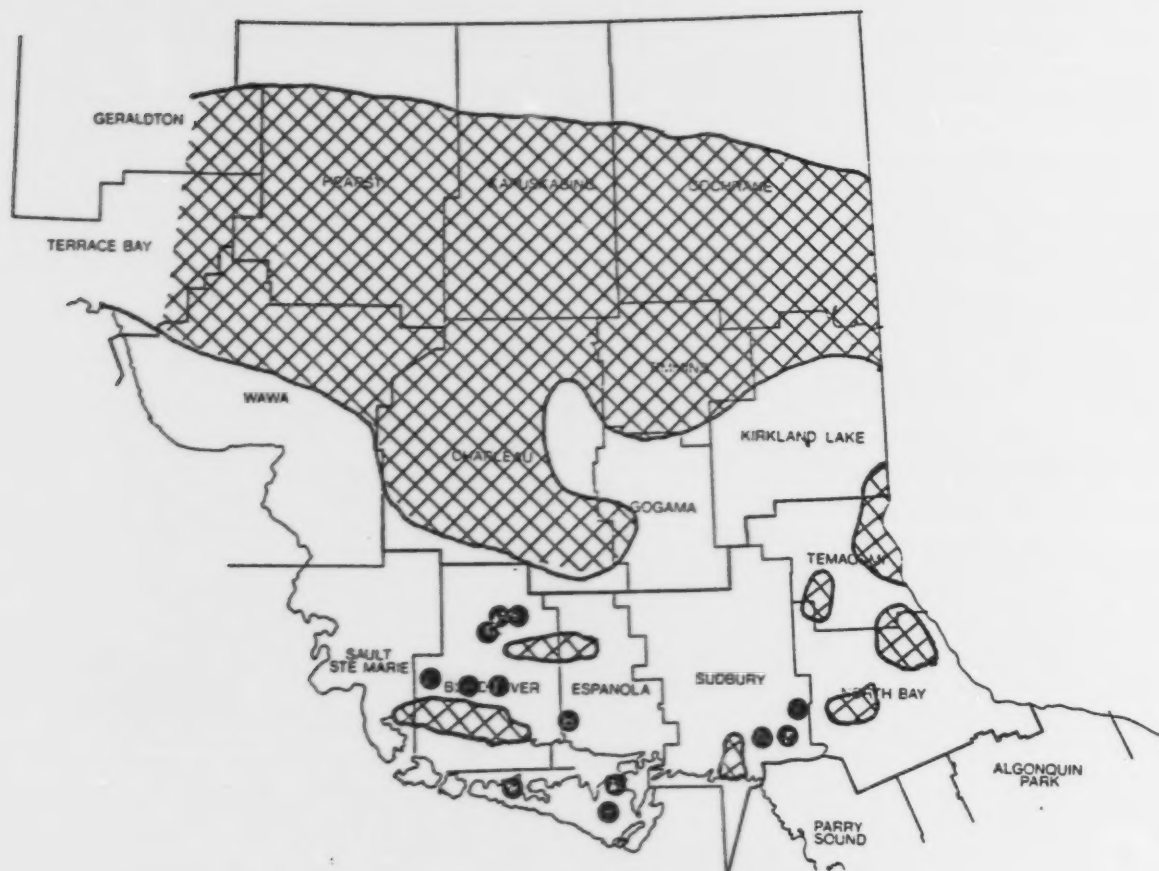
Areas within which defoliation
occurred in 1973

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation
occurred in 1972

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation
occurred in 1975

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Large Aspen Tortrix

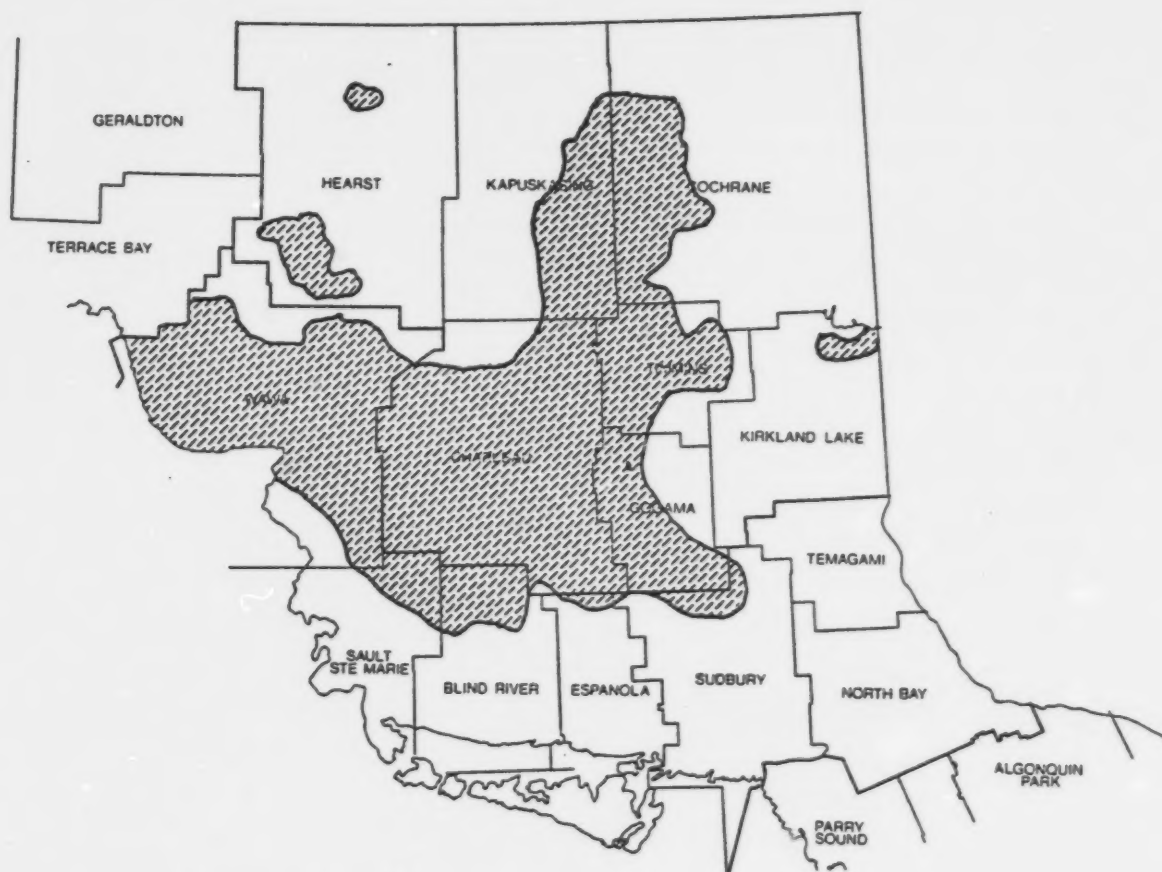
Areas within which defoliation
occurred in 1974

LEGEND

Moderate-to-severe defoliation • or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1950

0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1950

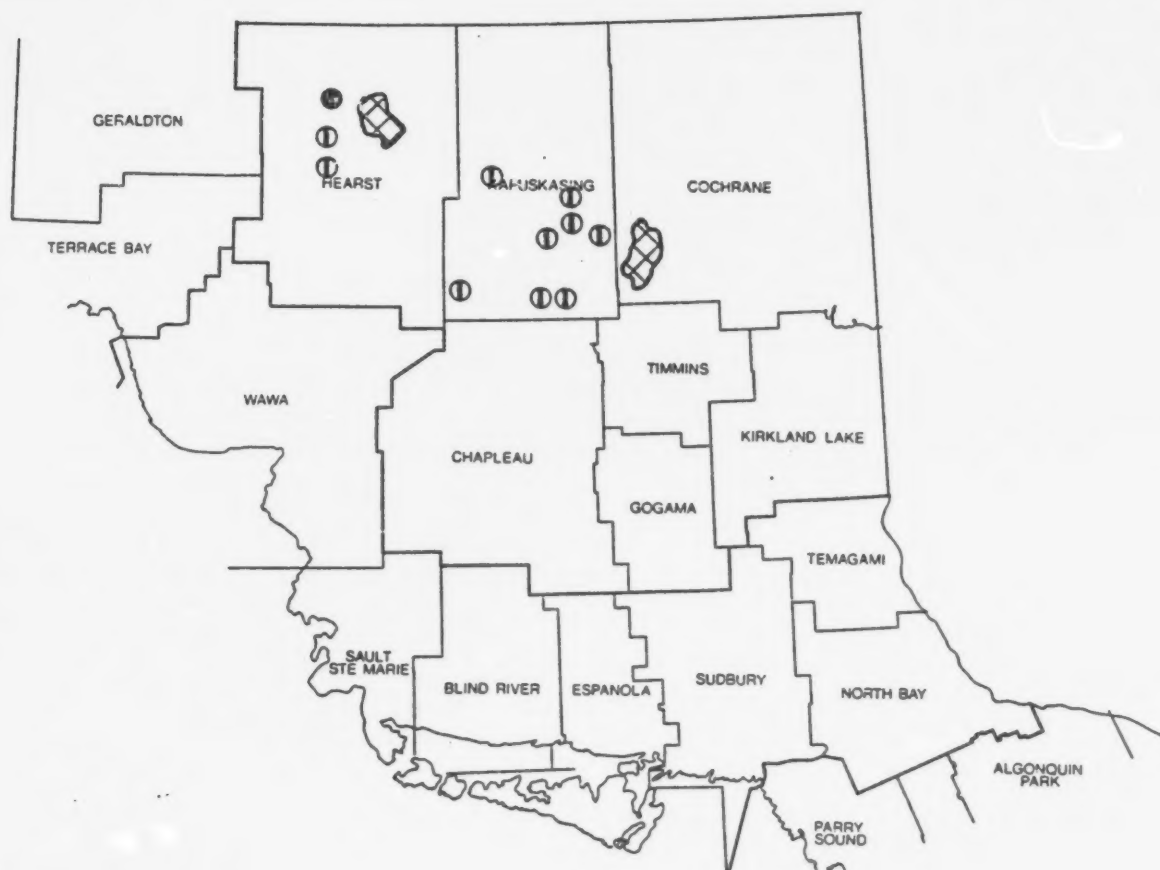
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1952

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1951

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ①

Moderate-to-severe defoliation 

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1954

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ①

Moderate-to-severe defoliation



NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1953

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1956

LEGEND

Light defoliation



0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1955

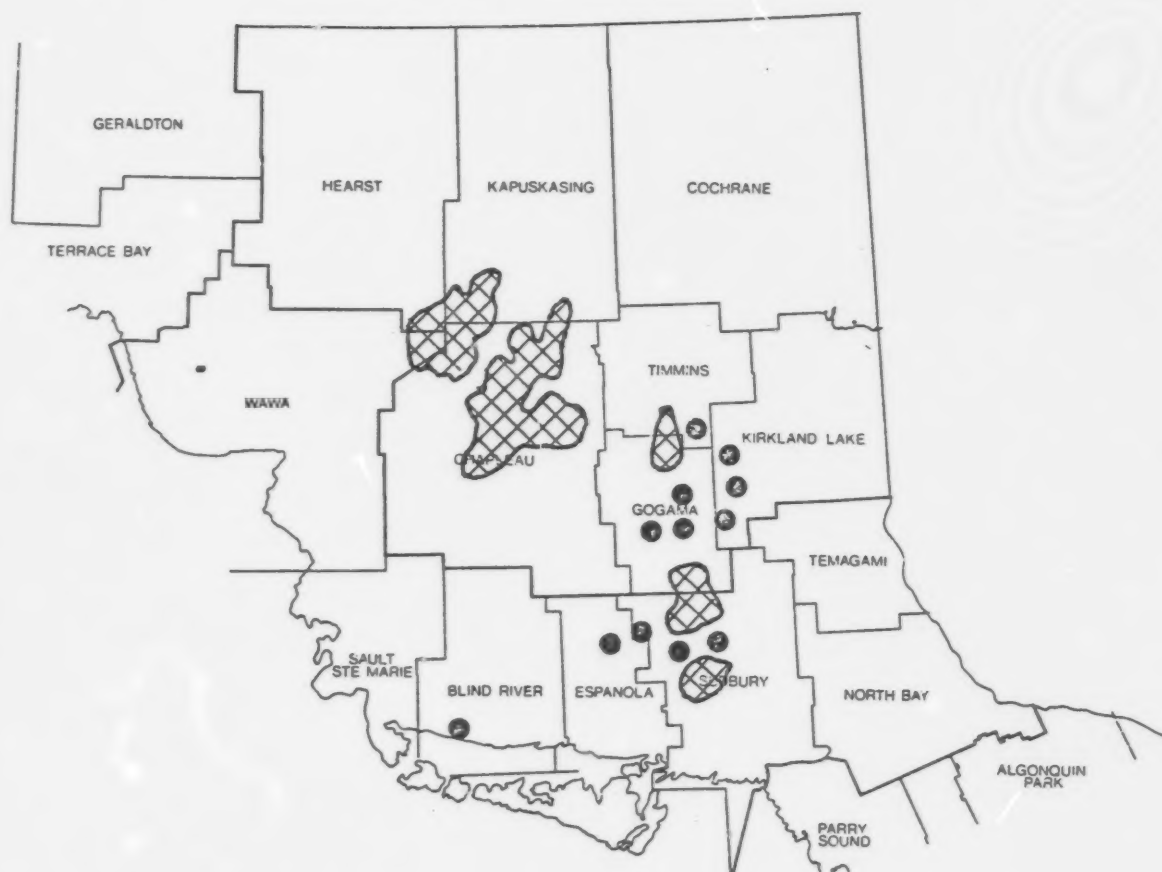
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ① or



NORTHEASTERN ONTARIO



Spruce Budworm

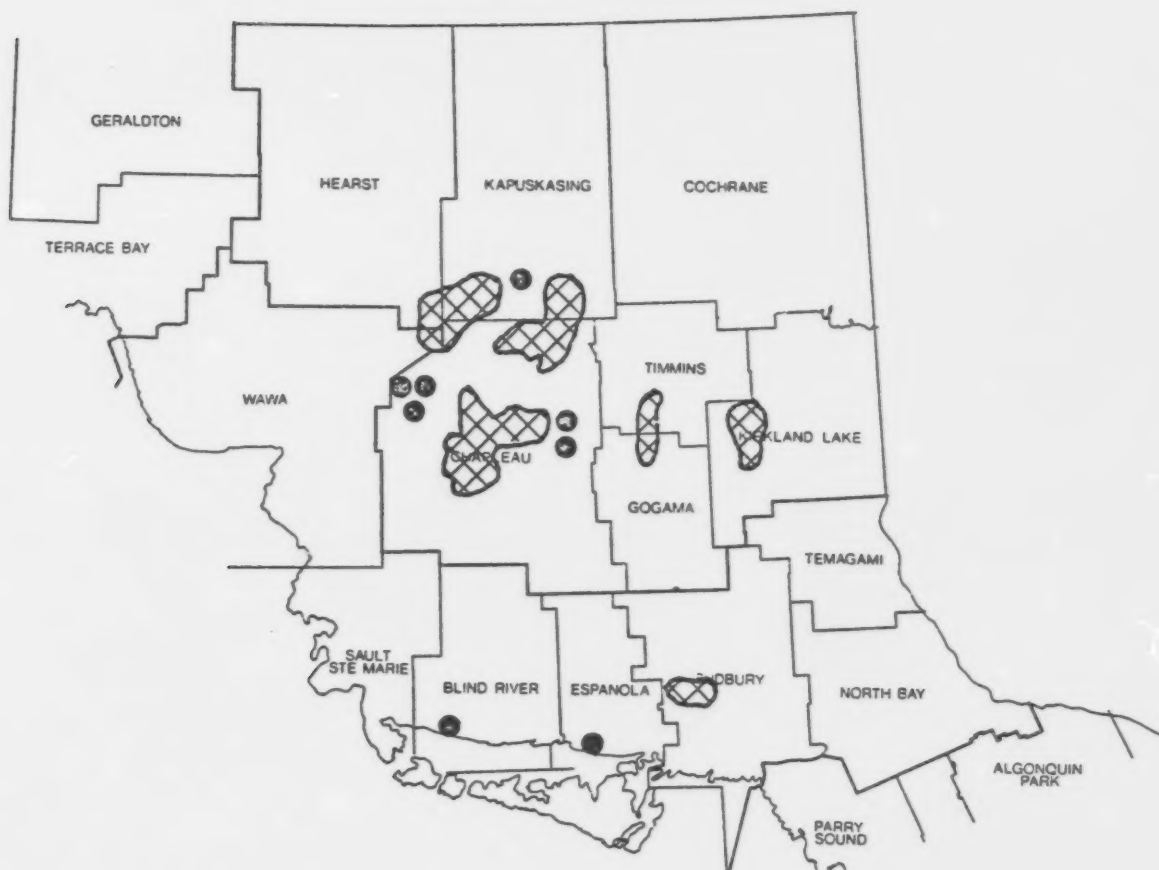
Areas within which defoliation
occurred in 1969

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1968

LEGEND

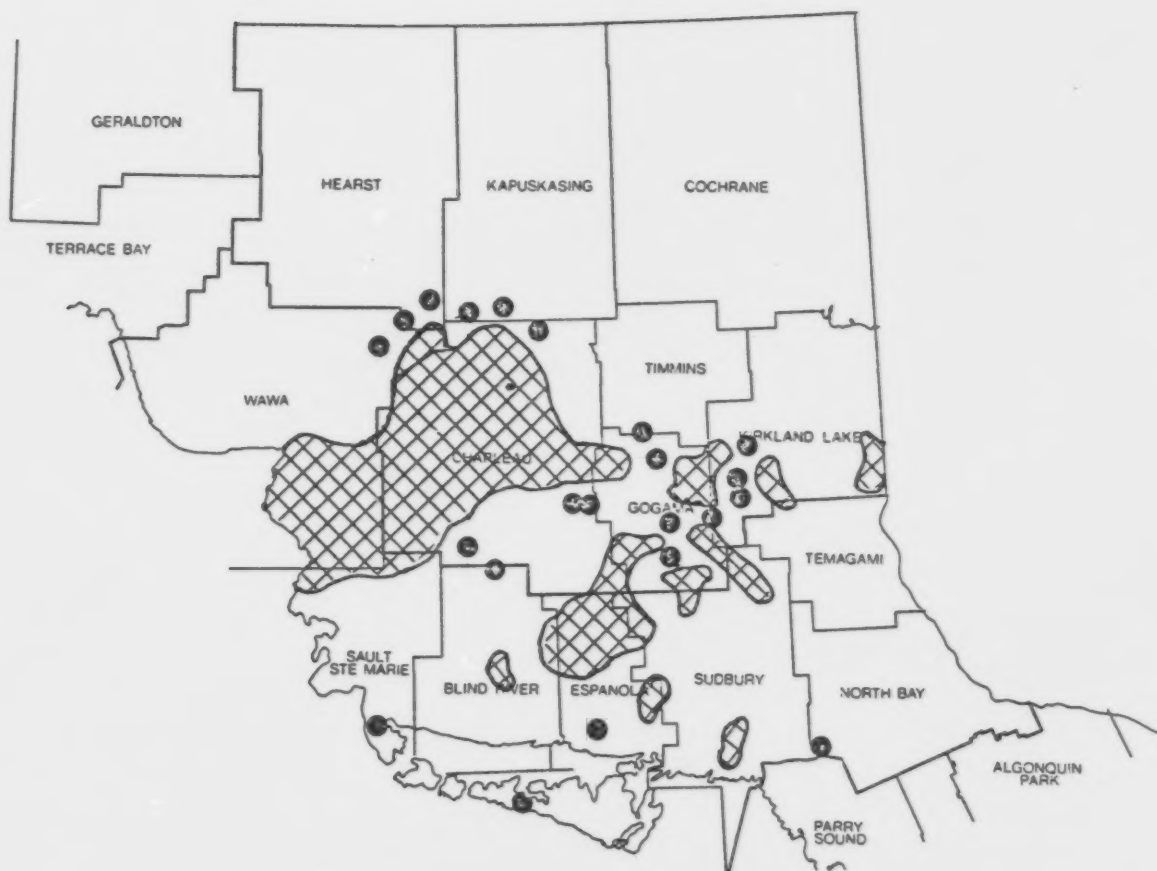
Moderate-to-severe defoliation ● or



0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



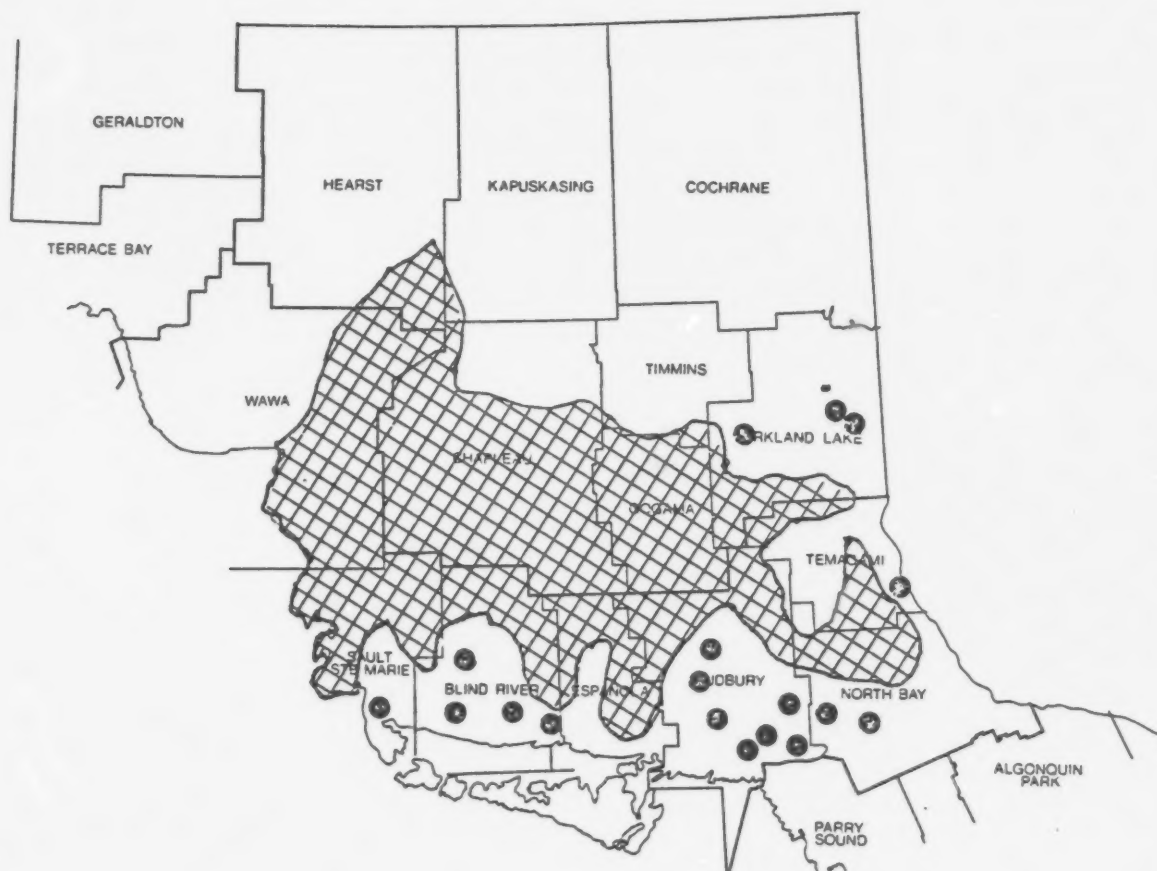
Spruce Budworm

Areas within which defoliation
occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Spruce Budworm

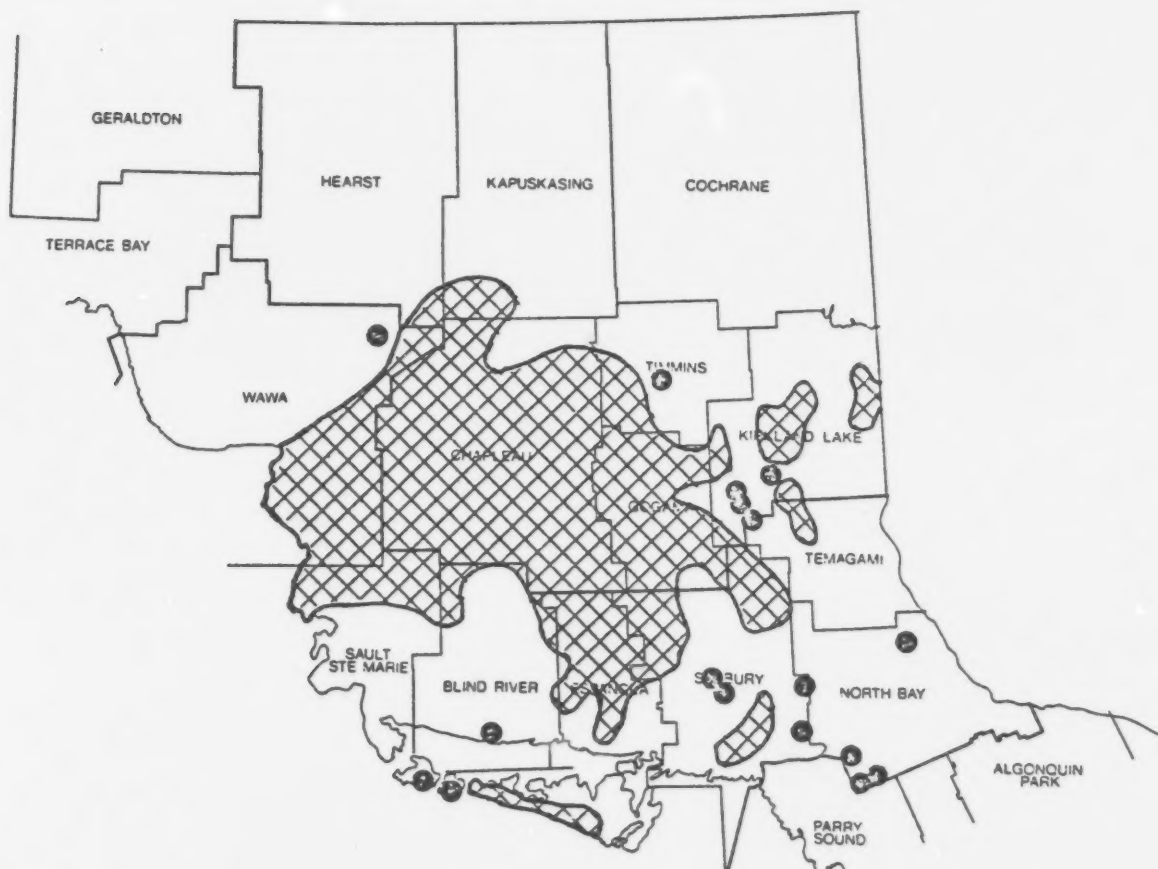
Areas within which defoliation
occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60
0 Kilometres 96

Spruce Budworm

Areas within which defoliation
occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1974

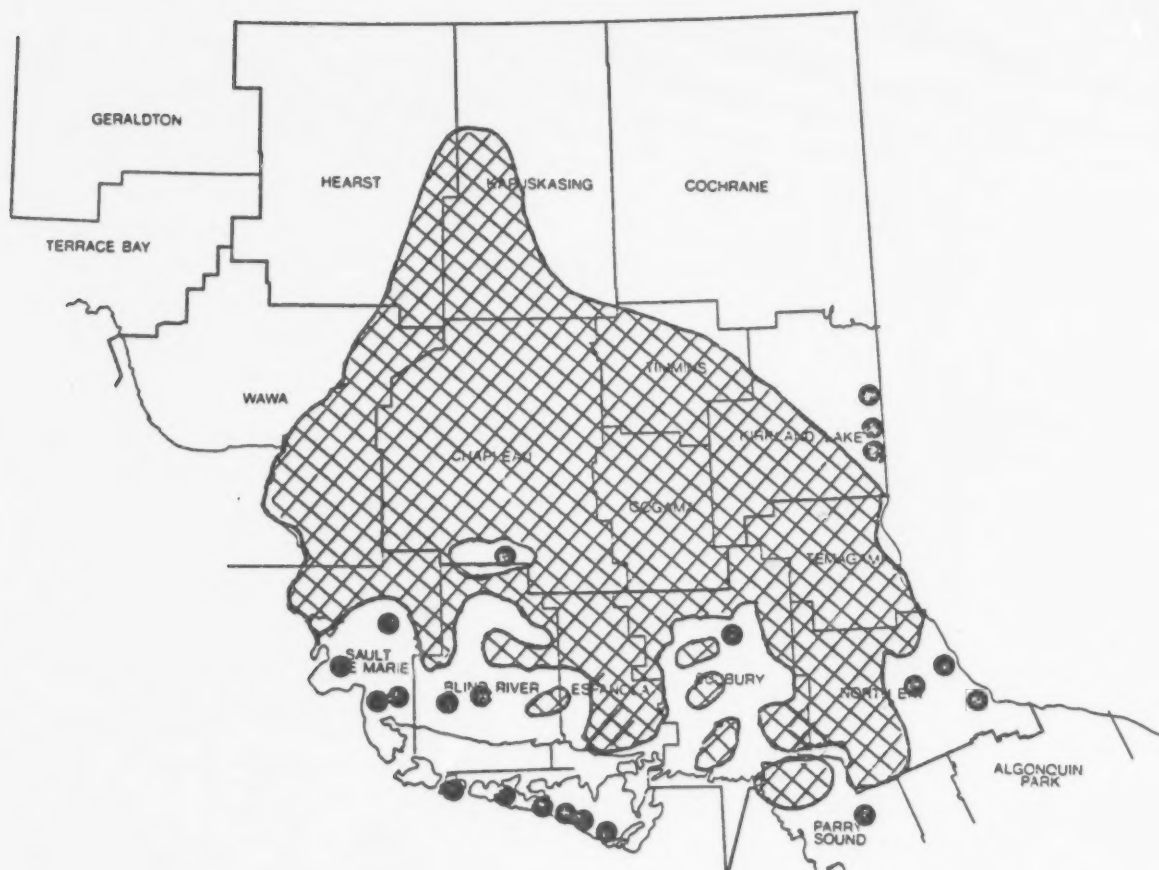
0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1974

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1975

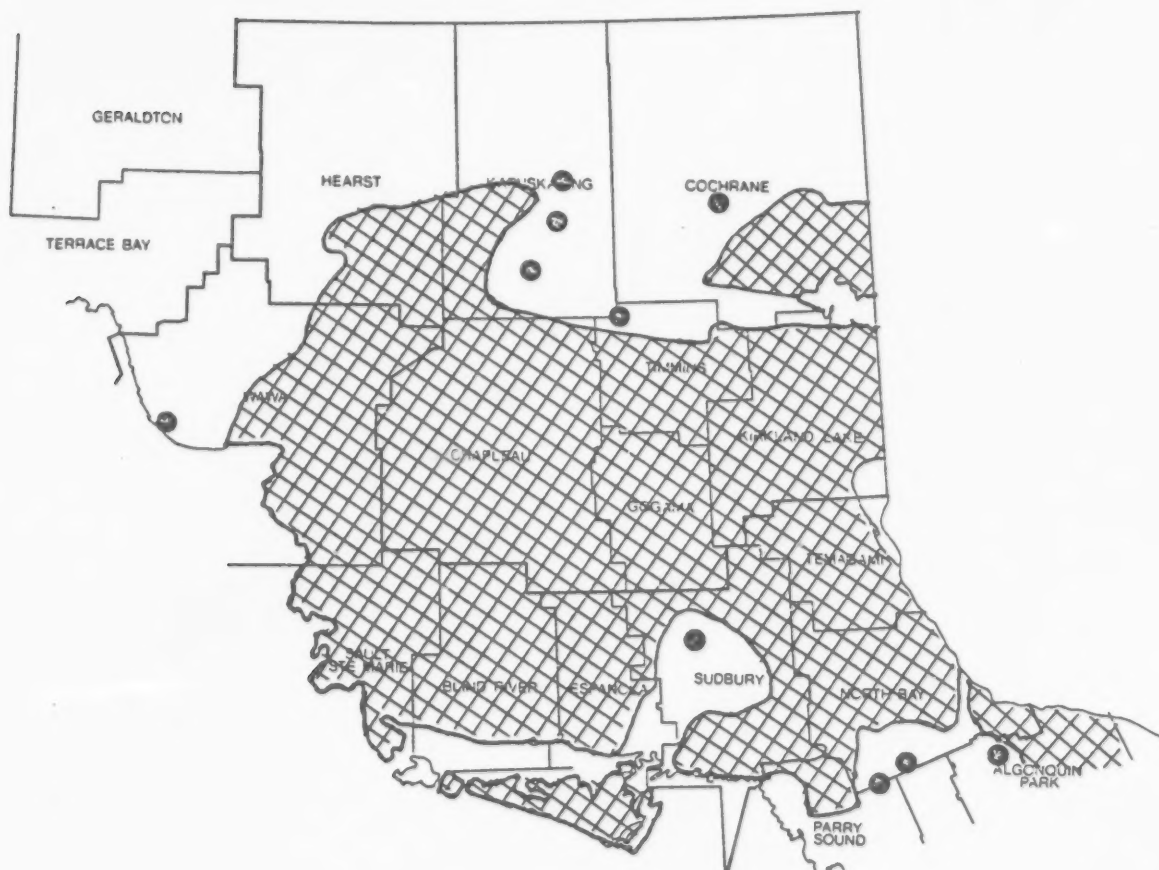
0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1976

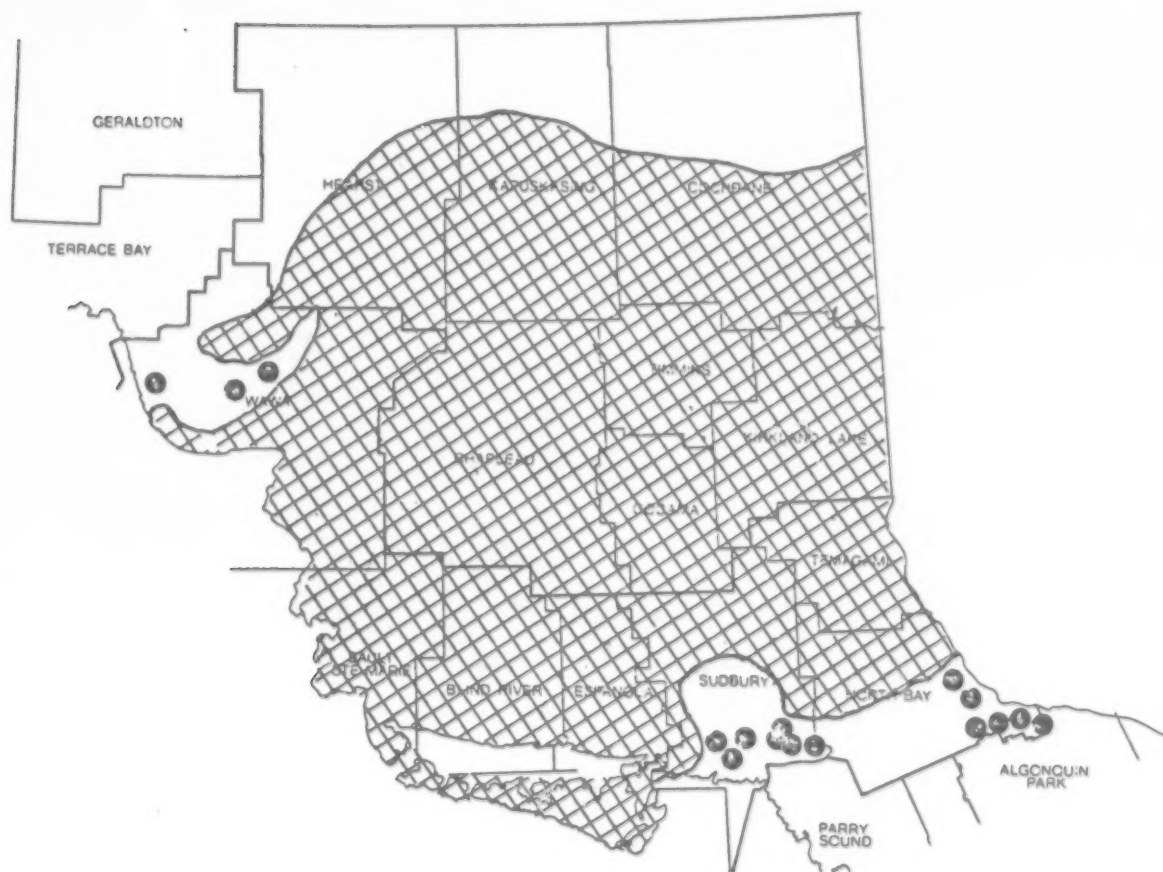
0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1977

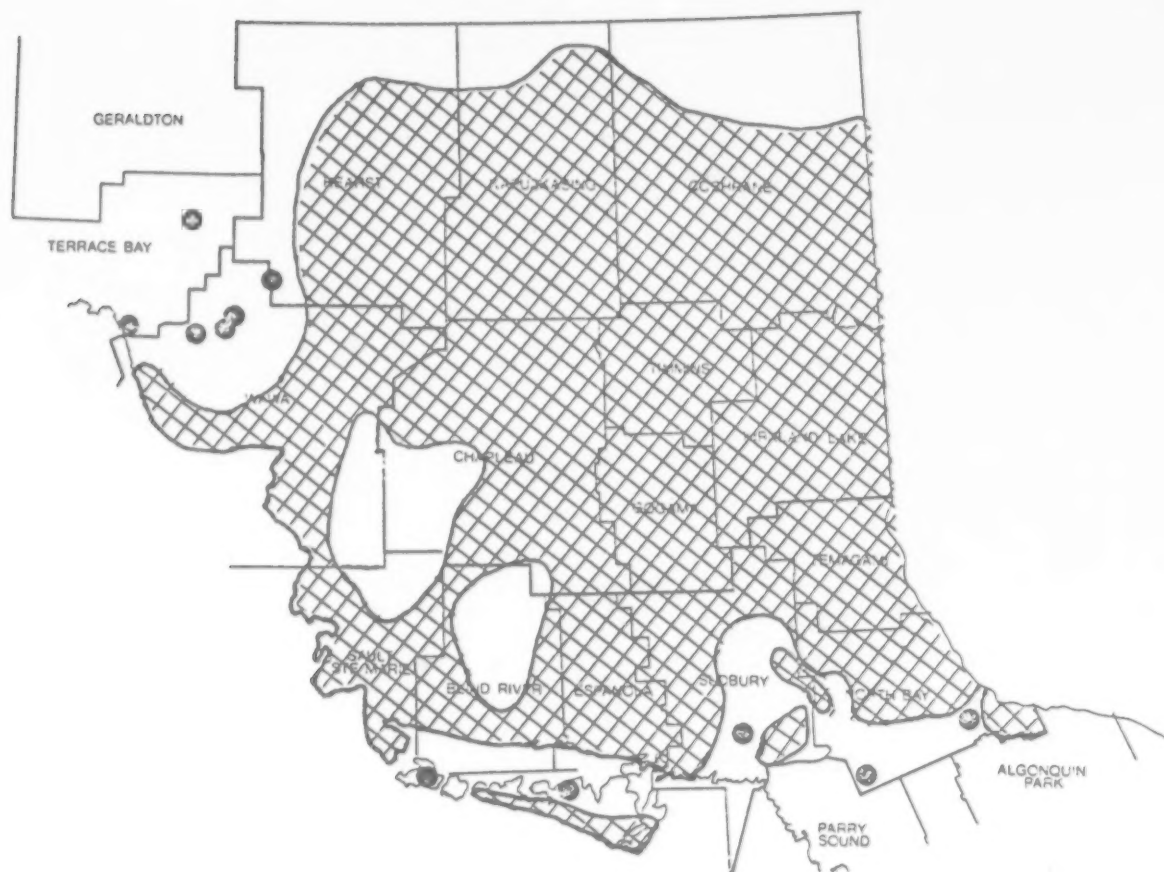
0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

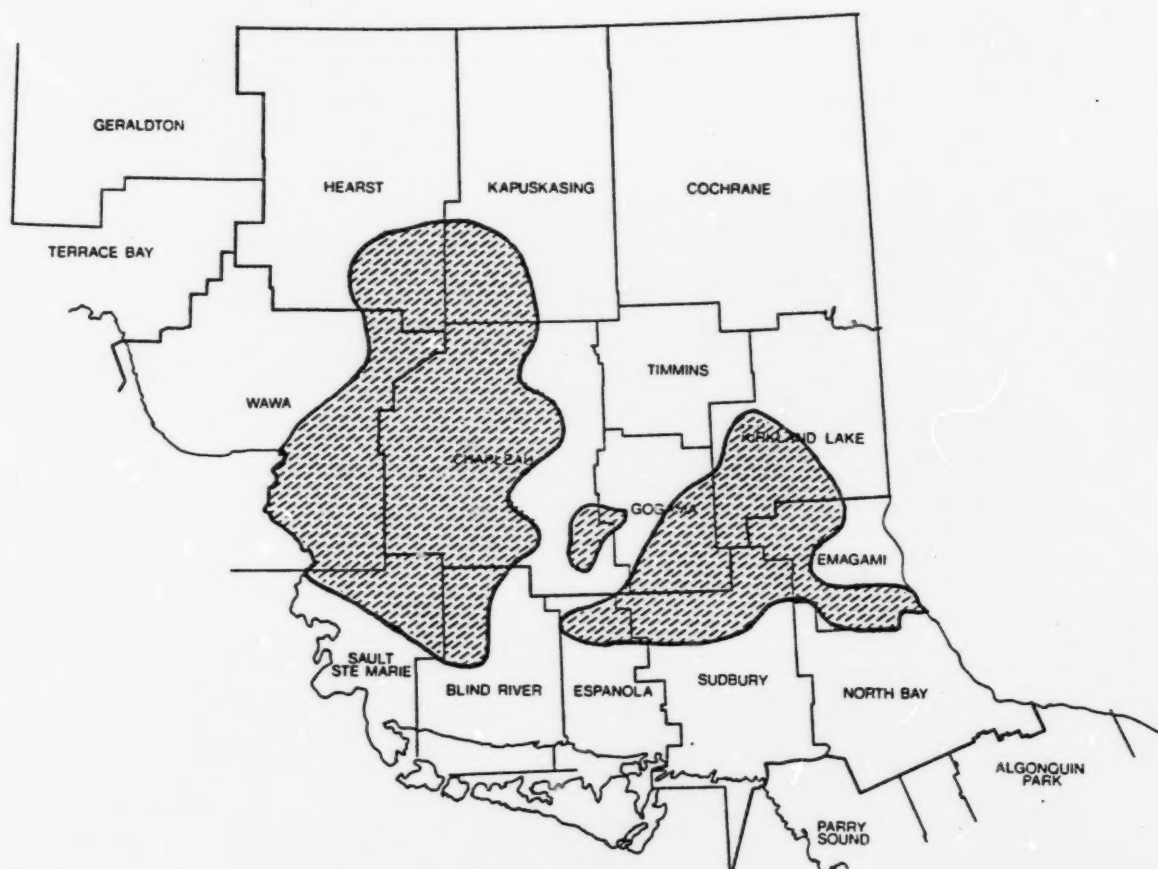
Areas within which defoliation
occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1978

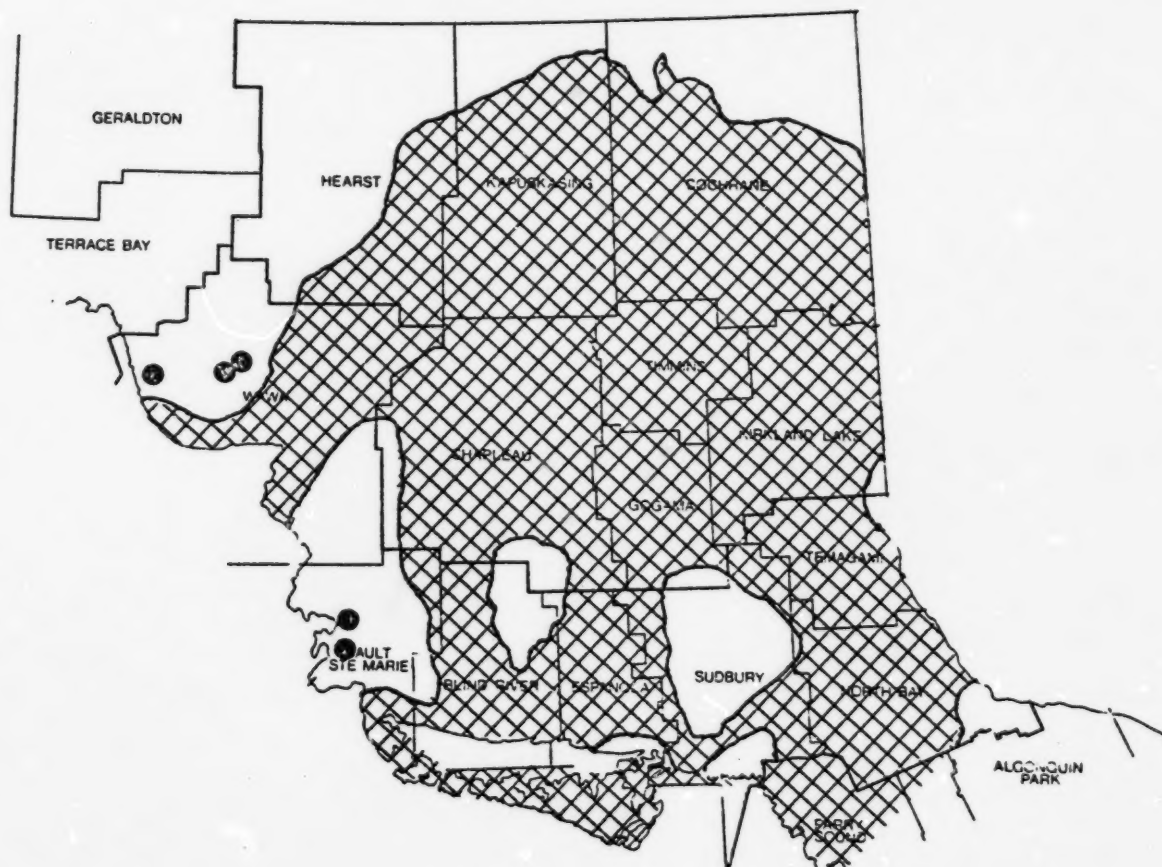
0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation
occurred in 1978

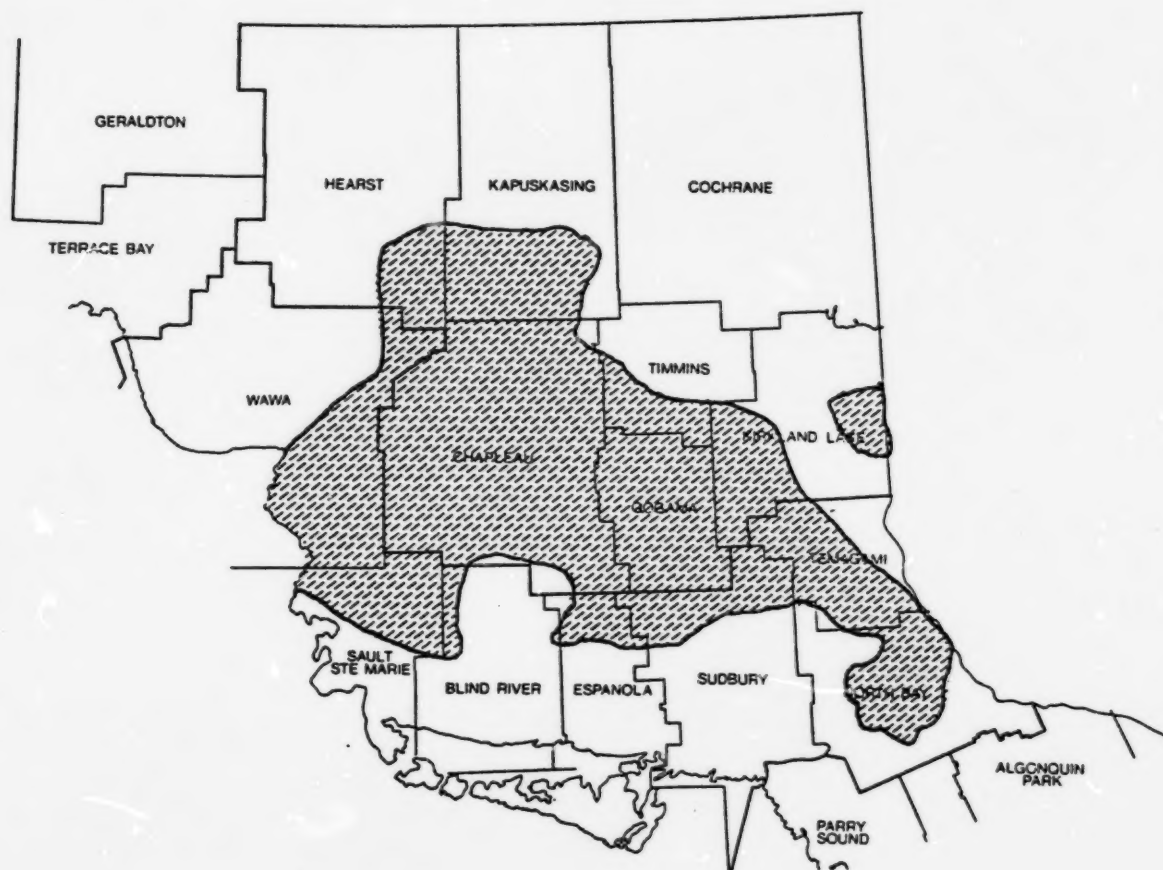
LEGEND

Moderate-to-severe defoliation ● or



0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1979

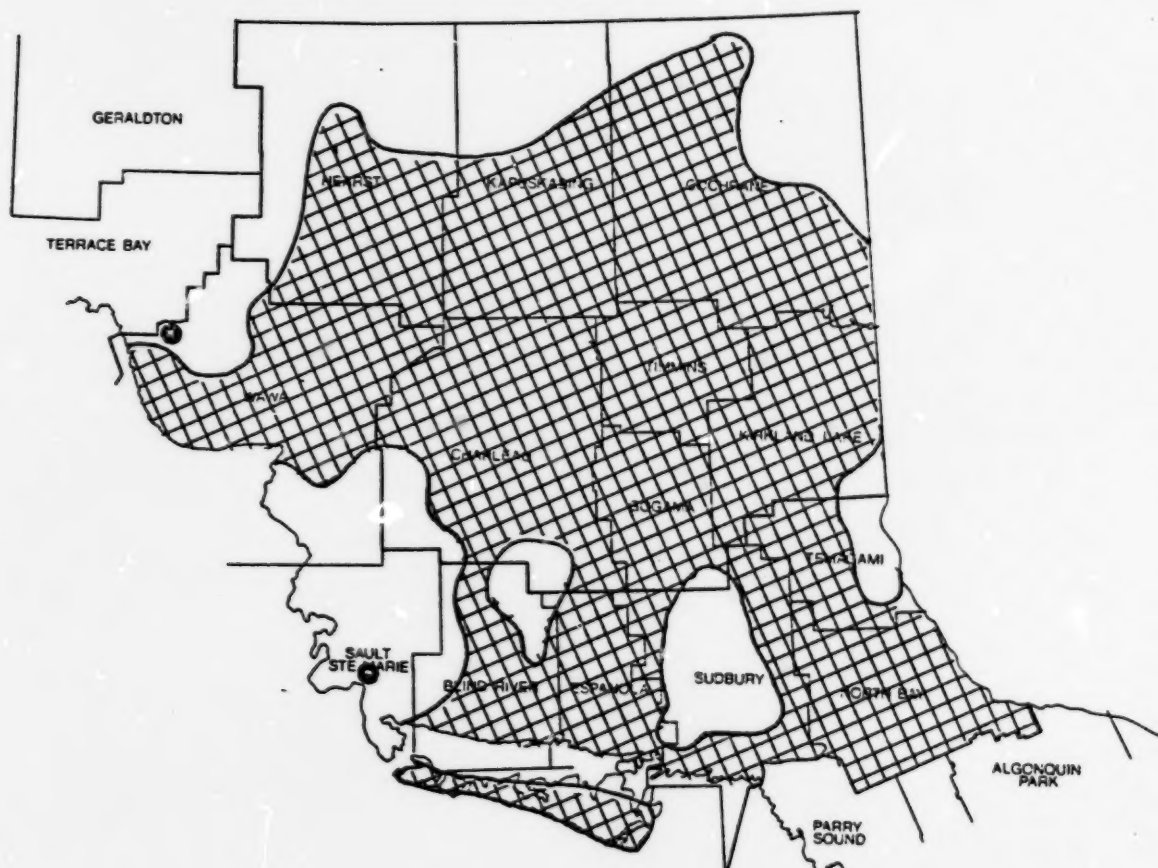
0 Miles 60
0 Kilometres 96

LEGEND

Mortality



NORTHEASTERN ONTARIO



Spruce Budworm

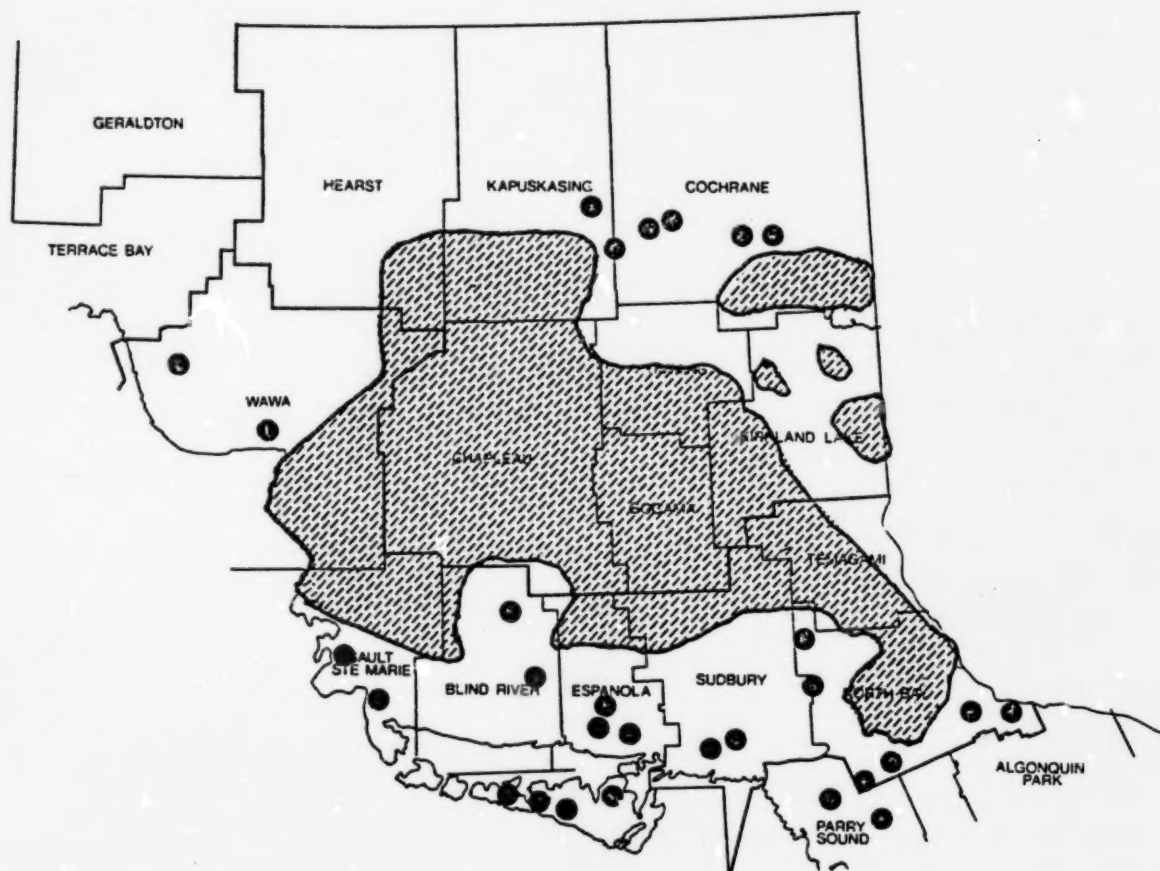
Areas within which defoliation
occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir
whole tree and top mortality
occurred in 1980

0 Miles 60
0 Kilometres 96

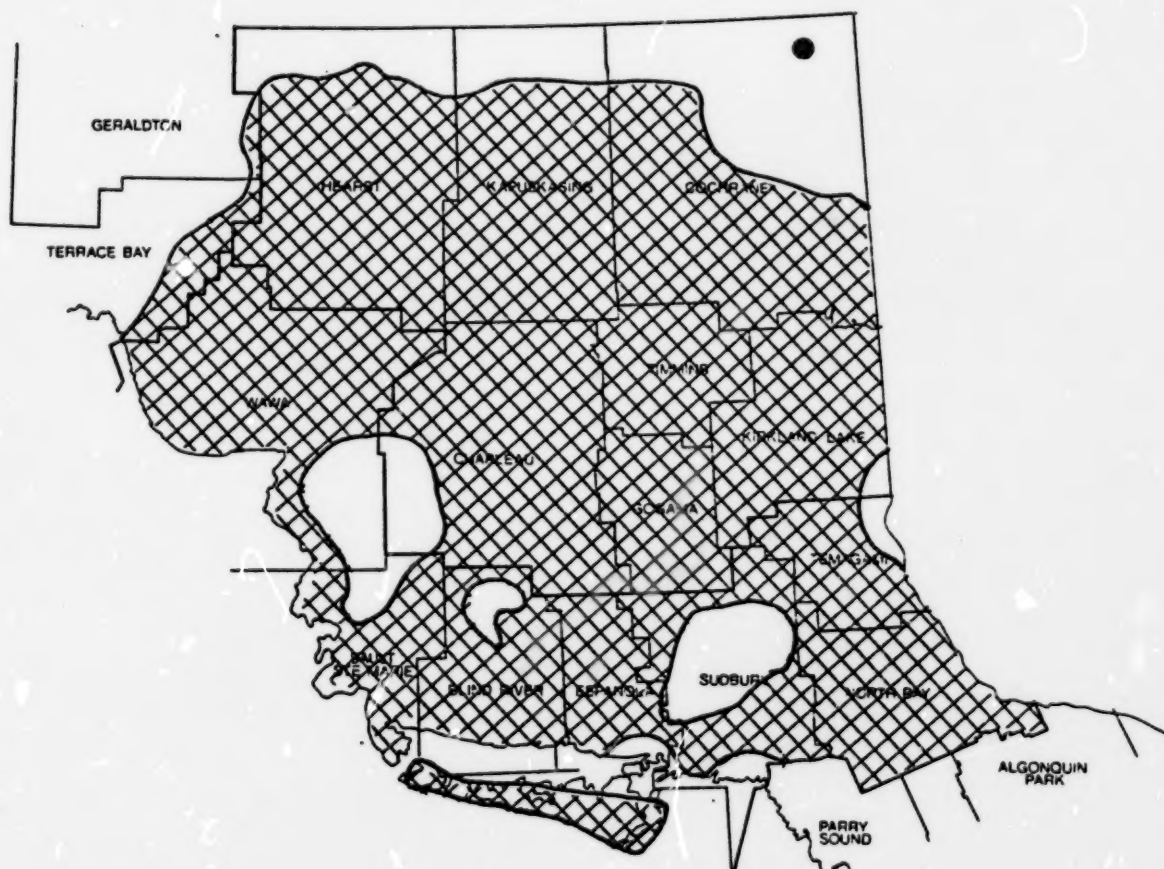
LEGEND

Mortality



or ●

NORTHEASTERN ONTARIO



0 Miles 60
0 Kilometres 96

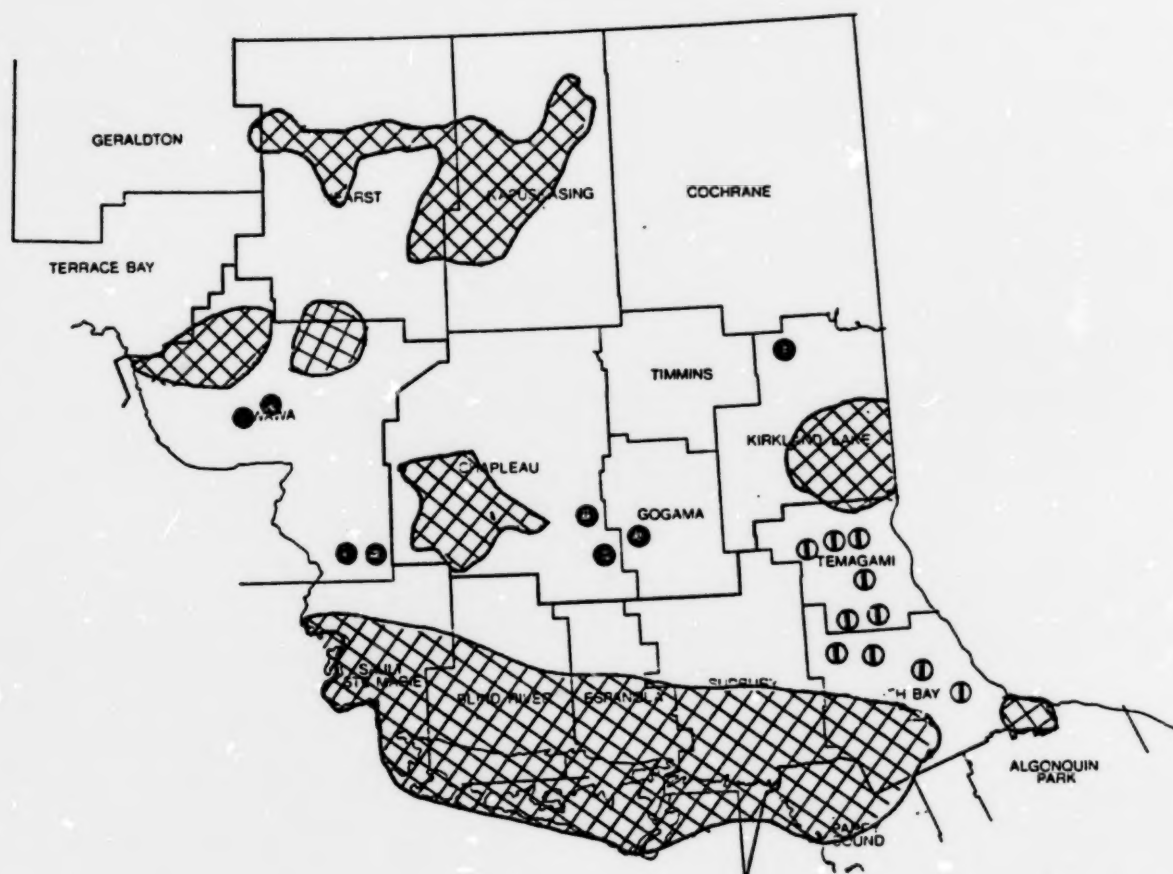
Spruce Budworm

Areas within which defoliation
occurred in 1980

LEGEND

Moderate-to-severe defoliation • or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1951

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60
0 Kilometres 96

Forest Tent Caterpillar

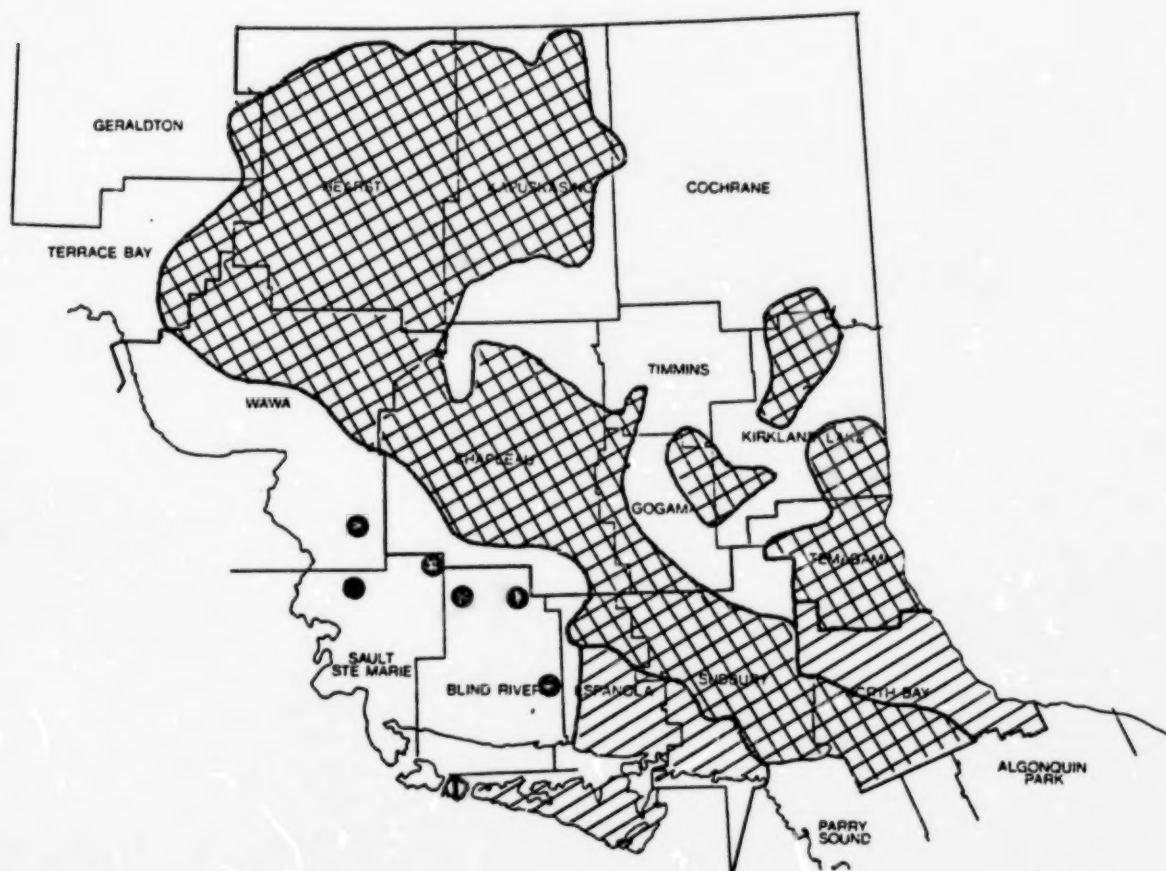
Areas within which defoliation
occurred in 1950

LEGEND

Light defoliation ○ or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

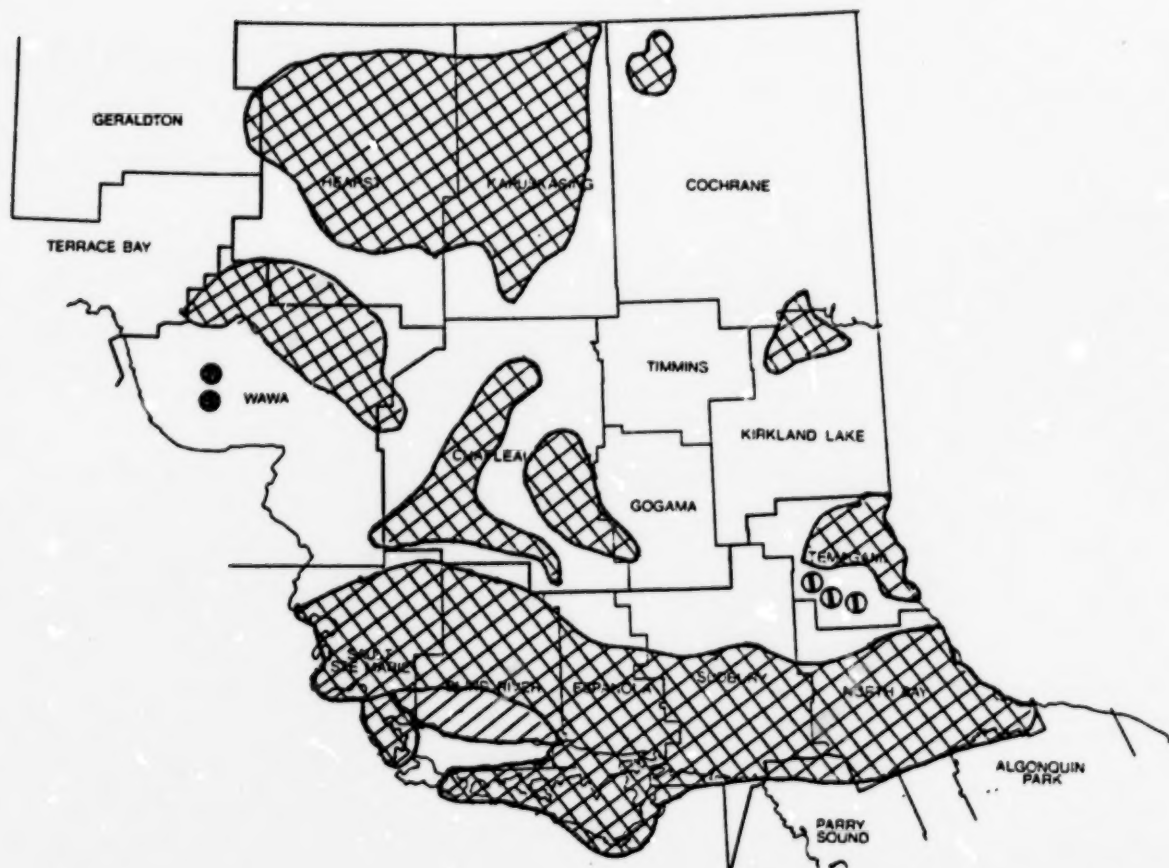
0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1952

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1955

LEGEND

Light defoliation ① or 
Moderate-to-severe defoliation 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1954

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation



Moderate-to-severe defoliation



NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1957

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1956

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1961

LEGEND

Light defoliation ⊖

Moderate-to-severe defoliation ●

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1960

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ●

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1963

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1962

LEGEND

Light defoliation ①

Moderate-to-severe defoliation 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1965

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ⊙ or 

Moderate-to-severe defoliation 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1964

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ○ or 

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1967

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1966

LEGEND

Light defoliation



Moderate-to-severe defoliation



or



0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1969

0 Miles 60
0 Kilometres 96

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1968

LEGEND

Light defoliation ①

Moderate-to-severe defoliation 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1974

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



0 Miles 60
0 Kilometres 96

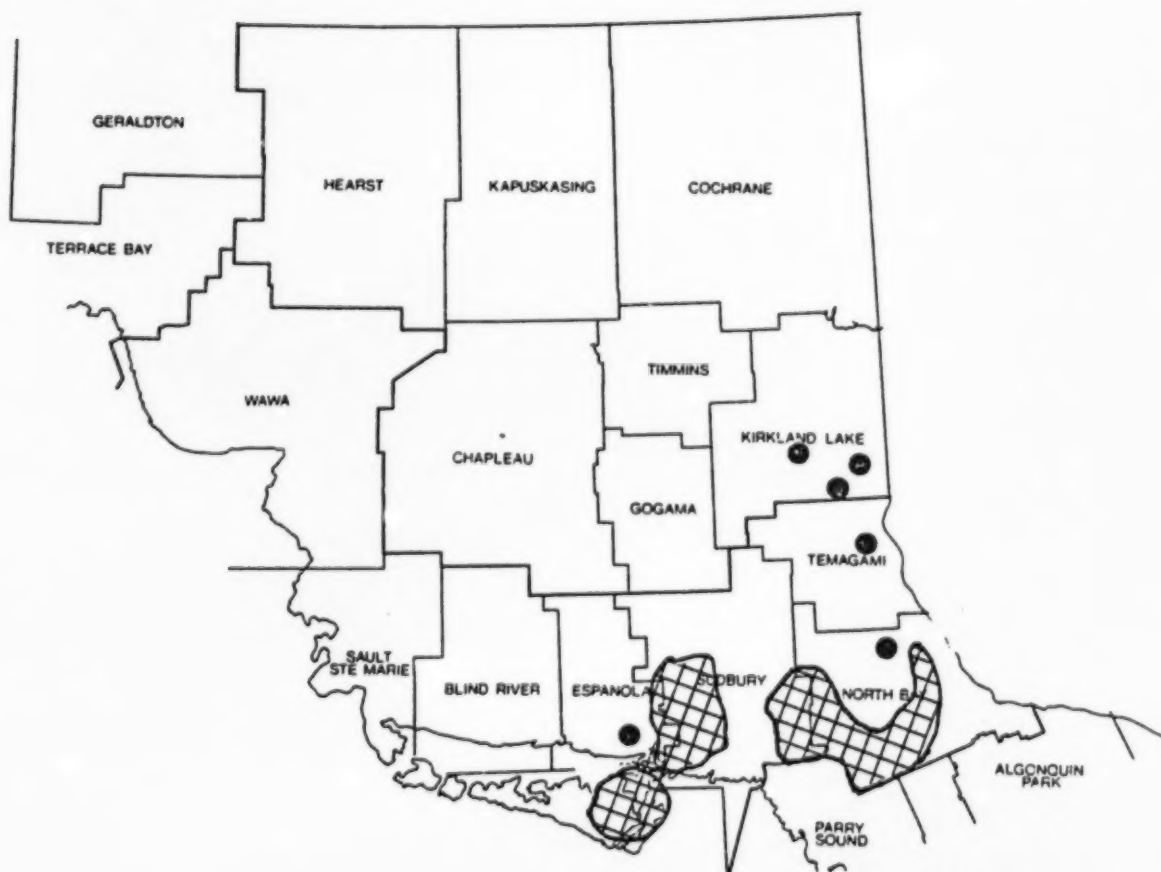
Forest Tent Caterpillar

Areas within which defoliation
occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or 

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or 

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1980

0 Miles 60
0 Kilometres 96

LEGEND

Moderate-to-severe defoliation



NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation
occurred in 1979

LEGEND

Moderate-to-severe defoliation ●

0 Miles 60
0 Kilometres 96

NORTHEASTERN ONTARIO



Ambermarked Birch Leafminer

Areas within which defoliation
occurred in 1960

LEGEND

Light defoliation



Moderate-to-severe defoliation



0 Miles 60
0 Kilometres 96